GEOMETRY — MODEL No 1

[Q1] *Choose the correct answer:*

(1) If area of rhombus 40 cm^2, one of its diagonals 10 cm, then the length of other diagonal .... cm

a) 5   b) 6   c) 8   d) 10

(2) If the area of square 50 cm^2, then length of its diagonal ...... cm

a) 5   b) 10   c) 25   d) 100

(3) In $\triangle ABC$, if $(AB)^2 - (BC)^2 = (AC)^2$, then m ($\angle$ B) ....$\square$

a) Acute   b) Right   c) Obtuse   d) Straight

(4) If area of triangle 30 cm^2, its height 5 cm, then its base .... Cm

a) 6   b) 12   c) 18   d) 5

(5) Projection of point (5 , 3) on X – axis is ....

a) (5 , 3)   b) (– 5 , 3)   c) (5 , 0)   d) (0 , 3)

(6) If the drawing scale of two similar triangles 1 : 2 and measure of one of angles of smaller triangle is 50°, then the measure of corresponding angles in greater triangle equals ....°

a) 25   b) 50   c) 100   d) 150

[Q2] **Complete each of the following:**

6) Area of Parallelogram 30 cm^2, its base 6 cm, its height ....

7) In $\triangle ABC$ right at A, $\overline{AD} \perp \overline{BC}$, then AB × ..... = BC × ....

8) Area of Parallelogram equal .... Area of triangle with common base and between two parallel lines one of them carrying this base

9) Two triangles area similar if their corresponding sides are ....

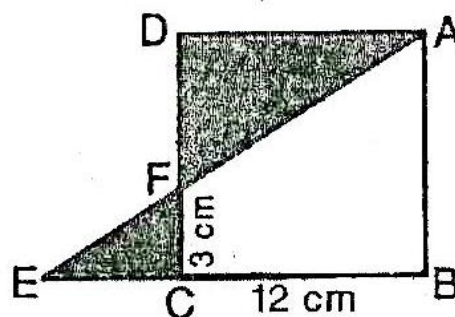**10)** The median of triangle divide it into two triangles ....

[Q3] A) In the opposite figure:

ABCD is square of side 12 cm,

CF = 3 cm, $\overline{AE} \cap \overline{CD} = \{F\}$

① Prove that: $\triangle ADF \simeq ECF$

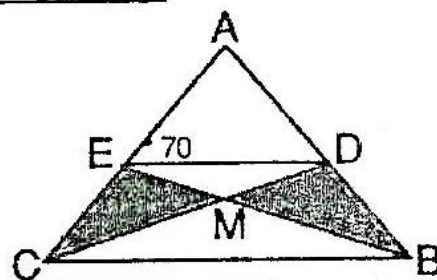② Find length of $\overline{EC}$

B) In the opposite figure:

If area of $\triangle DBM$ = area of $\triangle CME$

And m ($\angle AED$) = 70°

Find m ($\angle ACB$)

[Q4] A) The ratio between two parallel bases in a trapezium 2 : 3, and length of its middle base 30 cm, find:
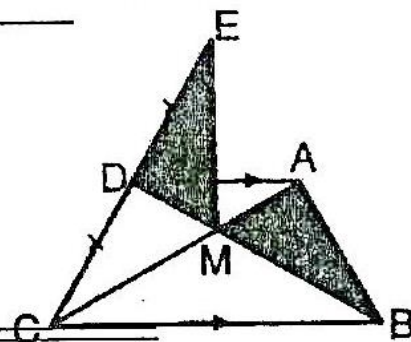
① Length of its bases

② Area of trapezium if its height 24 cm

B) In the opposite figure:

$\overline{AD} \, // \, \overline{BC}$, D midpoint of $\overline{BC}$

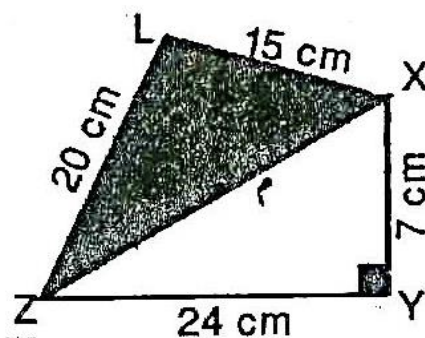Prove that:

Area of $\triangle ABM$ = area of $\triangle DME$

[Q5] A) Determine the type of triangle according to its angles if its sides lengths are AB = 8 cm, AC = 6 cm, BC = 7 cm

B) In the opposite figure:

M ($\angle XYZ$) = 90°, $\overline{LM} \perp \overline{XZ}$, XL = 15 cm

ZL = 20 cm, XY = 7 cm, YZ = 24 cm
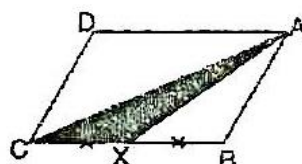
① Prove that: m ($\angle XLZ$) = 90°

② Find length of $\overline{LM}$, $\overline{XM}$

End of the questions

GEOMETRY – MODEL No ② 2

[Q1] Choose the correct answer:

(1) The diagonal of square whose area 50 cm^2 is ……. Cm

a) 10   b) 20   c) 30   d) 40

(2) If the ratio between two similar triangles 1 : 3 and length of sides of greater triangle is 12 cm, then the length of corresponding side in smaller triangle equals ……… cm

a) 4   b) 6   c) 12   d) 24

(3) In $\triangle$ ABC, $(AB)^2 - (BC)^2 > (AC)^2$, then $\angle$ B ……………

a) Acute   b) Right   c) Obtuse   d) Straight

(4) Length of two parallel bases in trapezium 10 cm , 6 cm, its height 5 cm, then its area = ……………… cm^2

a) 10   b) 30   c) 40   d) 80

(5) If area of rhombus 48 cm^2, length of one of its diagonals 12 cm, then length of other diagonal is …………… Cm

a) 4   b) 8   c) 10   d) 16

(6) In the opposite figure:

BX = XC

Area of $\triangle$ AXC = ….. area of ABCD

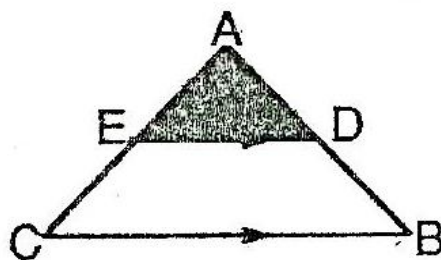a) $\dfrac{1}{2}$ b) $\dfrac{1}{4}$ c) $\dfrac{1}{8}$ d) 2

[Q2] Complete each of the following:

6) Length of projection of line segment on straight line parallel to it ……………… Length of line segment

7) Two similar polygons two third are ………………

8) Two triangles on same base and its vertices on straight line parallel to base are ……………..

9) Projection of point (5 , 3) on y axis is point …………..

10) Two diagonals of an isosceles trapezium are ……………

[Q3] A) In the opposite figure:

$\overline{DE} \ // \ \overline{BC}$, DE = 6 cm, AD : AB = 1 : 3

① Prove that: $\triangle ADE \simeq \triangle ABC$
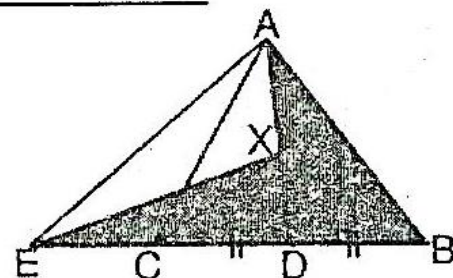
② Find length of $\overline{BC}$

B) In the opposite figure:

Area of $\triangle ADB$ = area of $\triangle XDE$
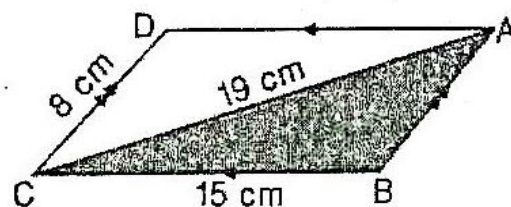
And DB = DC,

Prove that: XC // AE

[Q4] A) In the opposite figure:

ABCD is Parallelogram,

BC = 15 cm, DC = 8 cm, AC = 19 cm

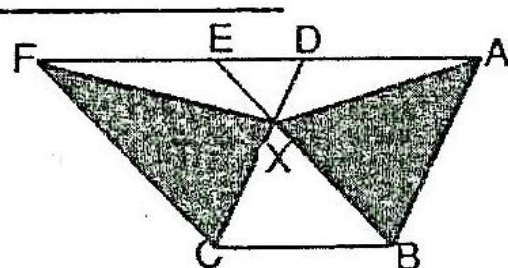Prove that: $\angle ABC$ is obtuse angle

B) In the opposite figure:

ABCD is Parallelogram

Prove that:

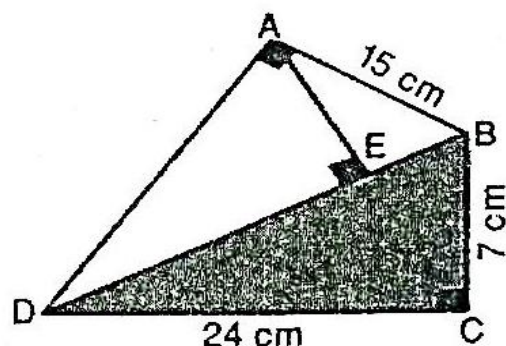Area of $\triangle AXB$ = area of $\triangle XCF$

[Q5] A) Find the area of rhombus whose perimeter 60 cm and measure of one of its angles is 60°

B) In the opposite figure:

ABCD is quadrilateral, $\overline{AE} \perp \overline{BD}$

m ($\angle$ BCD) = m ($\angle$BAD) = 90°, **Find:**

① Length of $\overline{AD}$, $\overline{BD}$

② Length of projection of $\overline{AB}$ on $\overline{BD}$

③ Length of projection of $\overline{AD}$ on $\overline{AE}$

End of the questions

GEOMETRY — MODEL No ③

[Q1] *Choose the correct answer:*

(1) Perimeter of rhombus of diagonals 12 cm , 16 cm is ....cm

a) 10   b) 40   c) 96   d) 192

(2) Length of projection of line segment on straight line parallel to it .... length of original line segment.

a) >   b) =   c) <   d) $\leq$

(3) Area of rectangle whose sides 8 cm , 4 cm = ...cm^2

a) 16   b) 24   c) 32   d) 64

(4) Sum of interior angles of quadrilateral = ...$^\circ$

a) 180   b) 360   c) 540   d) 720

(5) Measure of exterior angle of an equilateral triangle = ...$^\circ$

a) 60   b) 120   c) 180   d) 360

(6) Area of square whose perimeter 12 cm is ....cm^2

a) 72   b) 144   c) 3   d) 9
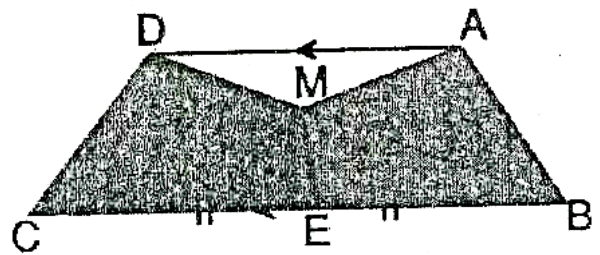
[Q2] Complete each of the following:

6) The triangles with equal bases and lay on same straight line and have common vertex are ....

7) In $\triangle ABC$, AB = 8 cm, BC = 5 cm, AC = 4 cm, then $\triangle ABC$ is ....

8) If the length of two adjacent sides in Parallelogram are 5 cm , 9 cm, and its smaller height is 7 cm, then its area ....cm^2

9) Two triangles are similar if their corresponding sides are.........

10) The area of a square formed on one of the right sides of a right–angled triangle is equal to the area of the rectangle whose dimensions project of this side on hypotenuse and the length of ....

[Q3] A)   In the opposite figure:

$\overline{AD}$ // $\overline{BC}$, E is midpoint of $\overline{BC}$
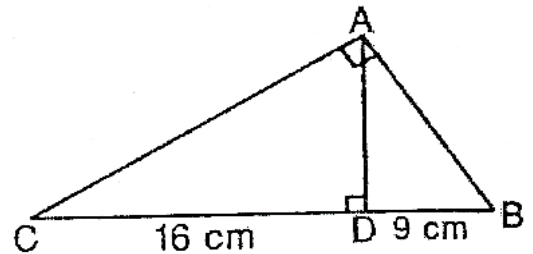
Prove that:

Area of ABEM = area of DCEM

B)   In the opposite figure:

△ ABC right at A, $\overline{AD} \perp \overline{BC}$

BD = 9 cm , CD = 16 cm

Find length of $\overline{AB}$
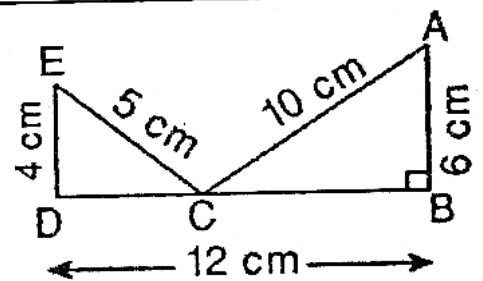
(figure: △ABC right at A, with D on CB, CD = 16 cm, BD = 9 cm)

[Q4] A)   In the opposite figure:

m (∠ B) = 90°, AB = 6 cm, AC = 10 cm

ED = 4 cm, EC = 5 cm, BC = 12 cm

Prove that: m (∠ D) = 90°

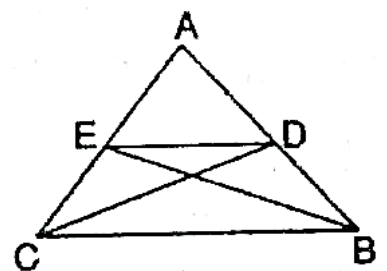*(figure: E, A at top; ED = 4 cm, EC = 5 cm, AC = 10 cm, AB = 6 cm, BC = 12 cm)*

B) Two similar triangles, perimeter of the first 54 cm, lengths of sides

of other triangle 5 , 6 , 7 cm, find the sides lengths of first triangle

---

[Q5] A)   In the opposite figure:

Area of △ ABE = area of △ ACD

Prove that:

$\overline{DE}$ // $\overline{BC}$

(figure: △ABC with E on AC, D on AB, lines drawn)

B) Find the middle base of a trapezium whose area 110 cm² and its

height 10 cm.

End of the questions

GEOMETRY — MODEL No (4)

[Q1] Choose the correct answer:

(1) Area of square whose side 12 cm is ....cm^2

  a) 36   b) 48   c) 72   d) 144

(2) In $\triangle$ ABC, if $\overline{AD} \perp \overline{BC}$, then projection of point A on $\overleftrightarrow{BC}$ is ....

  a) { D }   b) $\overline{BD}$ c) $\overline{CD}$ d) $\overline{BC}$

(3) Measure of exterior angle o equilateral triangle is ....°

  a) 30   b) 60   c) 120   d) 360

(4) The triangle of sides 5 cm , 8 cm , 12 cm is ....triangle

  a) Right   b) Acute   c) Obtuse   d) Isosceles

(5) In $\triangle$ ABC: $(AB)^2 = (BC)^2 + (AC)^2 + 5$, then m ($\angle$C) ......90°

  a) >   b) =   c) <   d) $\leq$

(6) The area of rhombus 100 cm^2, its diagonal 10 cm, the other diagonal is .... cm

  a) 2   b) 5   c) 10   d) 20

[Q2] Complete each of the following:

6) If the ratio between two similar triangles 2 : 3 and measure of one angle smaller triangle is 20°, then the measure of corresponding angle in greater triangle equals .... °

7) Area of Parallelogram equals .... area of triangle with common base and lies between two parallel lines
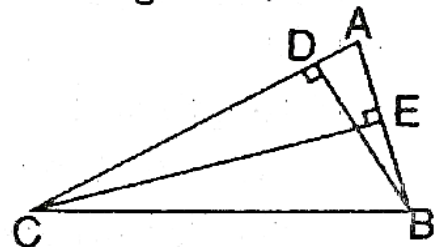
8) In the opposite figure:

  AB = 5 cm , AC = 10 cm

  EC = 8 cm, then BD = ... cm

9) Sum of measures of two complementary angles is ....

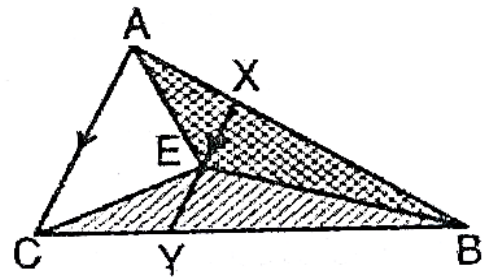**10)** Two triangles are similar if their corresponding sides are ....

[Q3] **A)** **In the opposite figure:**

$\overline{AC} \; / / \; \overline{XY}$, F midpoint of $\overline{XY}$

Prove that:

Area of △ ABF = area of △ CBF

B) **In the opposite figure:**

DE // BC , AE = 5 cm

EC = 2 cm, AD = 8 cm

① Prove that: △ ABC ≃ ADE

② Find length of $\overline{BD}$

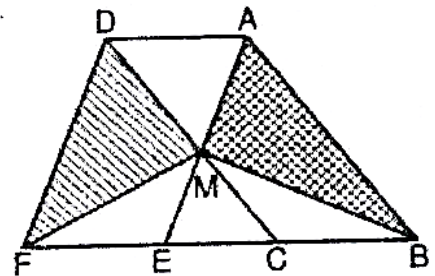**[Q4]** **A)** Area of trapezium 180 cm², its height 12 cm, ratio between its two parallel bases 3 : 2, find length of each one

B) **In the opposite figure:**

ABCD, AEFD are two Parallelograms

Prove that:

Area of △ ABM = area of △ DFM

[Q5] **In the opposite figure:**

ABCD is quadrilateral, m (∠ B) = 90°
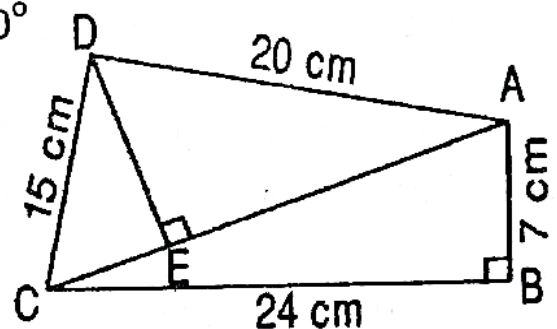
$\overline{DE} \perp \overline{AC}$, AB = 7 cm, BC = 24 cm

CD = 15 cm, DA = 20 cm

Find:

① Length of $\overline{AC}$

② Prove that m (∠ ADC) = 90°

③ Find length of projection of $\overline{DC}$ on $\overleftrightarrow{AC}$

End of the questions

GEOMETRY — MODEL No 5
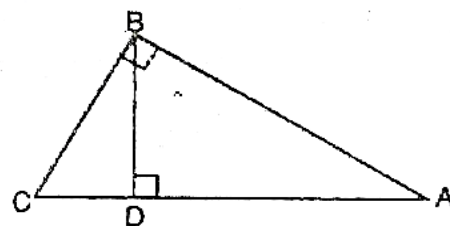
[Q1] Complete each of the following:

6) The area of rhombus 48 cm^2, its diagonal 12 cm, the other diagonal is .... cm

7) In $\triangle$ ABC, AB = 5 cm, BC = 7 cm, CA = 11 cm, then m ($\angle$B) = ...

8) Two similar triangles, sides of first one 4 , 6 , 8 cm, perimeter of the other 72 cm, then the sides of the other ...., ..., ... cm

9) The median of triangle divide it into two triangles ....

10) In the opposite figure:
$\triangle$ ABC, m ($\angle$ABC) =90°, $\overline{BD} \perp \overline{AC}$
① Then projection of $\overline{AB}$ on $\overline{AC}$ is ....
② (BC)^2 = ... × ....
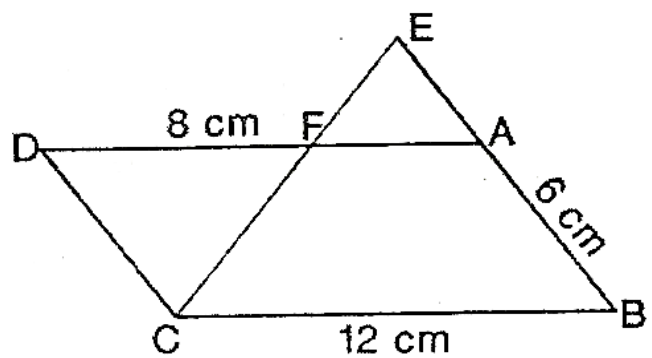

[Q2] Choose the correct answer:

(1) Area of triangle 24 cm^2, its height 8 cm, then its base ....cm

a) 2   b) 3   c) 6   d) 16

(2) ABCD is a Parallelogram, E $\in$ D, area of $\triangle$ AEB = 20 cm^2, then area of Parallelogram ABCD = ...cm^2

a) 10   b) 20   c) 30   d) 40

(3) A trapezium length of its parallel bases 5 cm , 7 cm, its area 42 cm, then its height = ... cm

a) 5   b) 6   c) 7   d) 12

(4) In $\triangle$ ABC, AB = 7 cm , BC = 5 cm , AC = 4 cm, then $\angle$ C ....

a) Acute   b) Obtuse   c) Right   d) Straight

(5) If length of rectangle 12 cm , its diagonal 13 cm, the its area .....

a) 144 cm^2 b) 169 cm^2 c) 156 cm^2 d) 60 cm^2

[Q3] A)   In the opposite figure:

ABCD is Parallelogram, $E \in \overrightarrow{BA}$

$\overline{CE} \cap \overline{AD} = \{ F \}$, BC = 12 cm,

AB = 6 cm, FD = 8 cm, FC = 7 cm
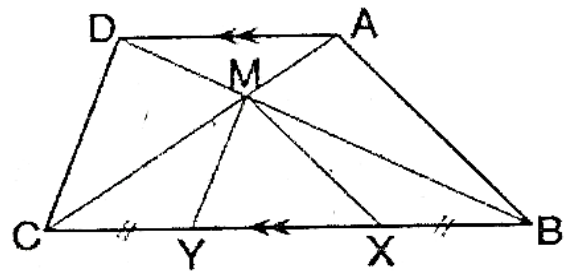
① **Prove that:** $\triangle$ AEF $\simeq$ $\triangle$ DCF

② Find length of $\overline{EB}$, $\overline{EF}$

B)   In the opposite figure:

$\overline{AD} // \overline{BC}$, $\overline{AC} \cap \overline{BD} = \{ M \}$,

X,Y $\in \overline{BC}$, BX = CY, _prove that:_

Area of ABXM = area of DCYM

[Q4] A) ABCD is a Parallelogram, AB = 8 cm, AC = 20 cm, BD = 12 cm,
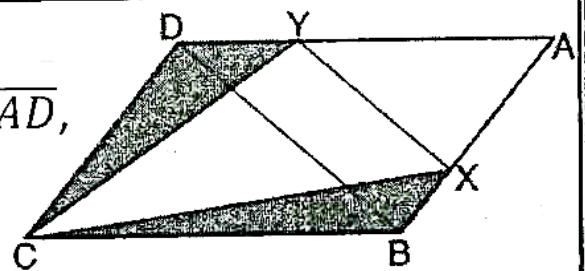
① **Prove that** m ($\angle$ ABD) = 90°

② Find area of Parallelogram ABCD

B)   In the opposite figure:

ABCD is Parallelogram, $X \in \overline{AB}$, $Y \in \overline{AD}$,

Area of $\triangle$ BCX = area of $\triangle$ CYD

Prove that: $\overline{XY} // \overline{BD}$

[Q5] In the opposite figure:

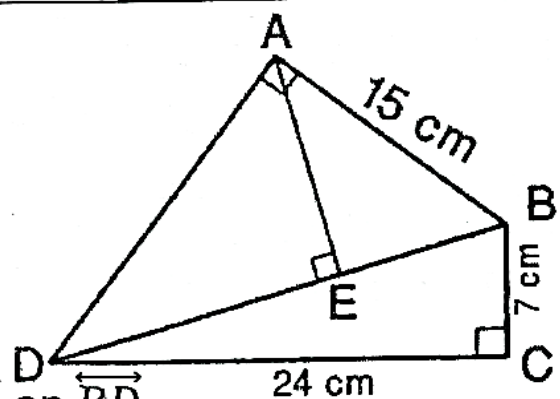ABCD is quadrilateral,

m ($\angle$ BCD) = m($\angle$BAD) = 90°

$\overline{AE} \perp \overline{BD}$, BC = 7 cm, CD = 24 cm

AB = 15 cm, Find:

① Length of $\overline{BD}$, $\overline{AD}$

② Find length of projection of $\overline{AB}$ on $\overleftrightarrow{BD}$

③ Find length of projection of $\overline{AD}$ on $\overleftrightarrow{AE}$

End of the questions

GEOMETRY – MODEL No 6

[Q1] Choose the correct answer:

(1) The area of square whose diagonal 8 cm is .... cm^2

a) 128   b) 64   c) 32   d) 16

(2) The side lengths 4 cm , 5 cm , 3 cm are sides of .... triangle

a) Isosceles   b) Acute   c) Right   d) Obtuse

(3) If the projection of line segment on a straight line is a point, then the line segment .... on straight line

a) Parallel   b) Perpendicular   c) Coincide   d) bisects

(4) If the area of a rhombus is 40 cm^2, and length of one of its diagonals is 10 cm, then the other diagonal is .... cm

a) 80   b) 50   c) 4   d) 8

(5) The area of rectangle whose dimensions 4 cm , 9 cm .... the area of rhombus whose diagonals 12 cm , 5 cm

a) >   b) =   c) <   d) ≤

(6) The ratio between corresponding sides in two similar polygons is 1 : 3, if the perimeter of the smallest one 15 cm, then the perimeter of the greater polygon is .... cm

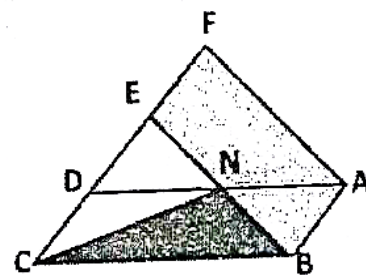a) 5   b) 45   c) 60   d) 75

[Q2] Complete each of the following:

6) XYZL is a parallelogram, area of $\triangle$ XYZ = 18 cm^2, then the area of parallelogram XYZL equals .... cm^2

7) In $\triangle$ ABC, if (AB –AC) (AB + AC) < $(BC)^2$, then $\angle$ C is ....

8) Two parallel straight lines to third are ....

9) Number of axes of symmetry of an equilateral triangle is ....

10) If two triangles drawn on same base are equal in area, then its vertices on the straight line ....

[Q3] A) In the opposite figure:

ABCD, ABEF are two parallelograms

Prove that:

Area of △ NBC = area Parallelogram of ABEF

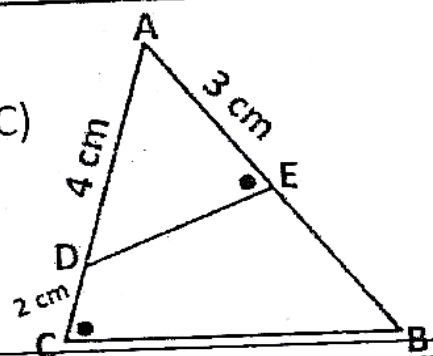**B) In the opposite figure:**

△ ABC, D ∈ $\overline{AC}$. E ∈ $\overline{AB}$, m (∠AED) = m (∠C)

AE = 3 cm, AD = 4 cm, CD = 2 cm

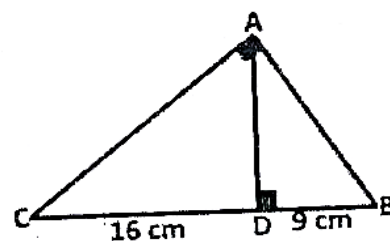① Prove that: △ ABC ∼ △ AED

② Find the length of $\overline{EB}$

[Q4] A) A trapezium of area 180 cm², its height 12 cm, the ratio between length of its bases 3 : 2. Find length of its bases.

B) In the opposite figure:

△ ABC if right triangle at A,

$\overline{AD} \perp \overline{BC}$, BD = 9 cm,

CD = 16 cm, find length of $\overline{AD}$, $\overline{AB}$, $\overline{AC}$

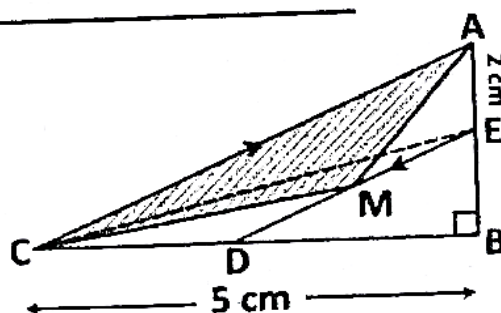**[Q5] A) △ XYZ, XY = 12 cm , YZ = 20 cm , XZ = 16 cm, determine the type of triangle according to its angles**

B) In the opposite figure:

△ ABC right at B, $\overline{ED}$ // $\overline{AC}$

AE = 2 cm , BC = 5 cm

Find area of △ AMB

End of the questions

GEOMETRY — MODEL No 7

[Q1] *Choose the correct answer:*

(1) The area of rhombus whose diagonals 10 cm , 12 cm is ..... cm^2

a) 240   b) 120   c) 60   d) 30

(2) In $\triangle ABC$, $(AC)^2 = (AB - BC)(AB + BC)$, then m $(\angle B)$ ....90°

a) $>$ b) $\geq$ c) $=$ d) $<$

(3) Two perpendicular straight line on third are ....

a) Parallel   b) Perpendicular   c) Coincide   d) Intersecting

(4) The length of diagonal of square whose area 50 cm^2 is .... cm

a) 100   b) 20   c) 10   d) 5

(5) Length of projection of line segment on straight line parallel to it .... length of line segment.

a) $>$ b) $=$ c) $<$ d) $\leq$

(6) If $ABCD \simeq XYZL$, $m(\angle A) = 80°$, $m(\angle Z) = 50°$, $m(\angle D) = 120°$, then $m(\angle B) = $ ....°

a) 90   b) 110   c) 130   d) 250

[Q2] Complete each of the following:

6) If $\triangle ABC \simeq \triangle XYZ$, and AB : XY = 2 : 5, AC = 8 cm, then XY = ... cm

7) Area of square of side length 8 cm = ... cm^2

8) In $\triangle ABC$, D is midpoint of BC, Area of $\triangle ABD = 20$ cm^2, then area of $\triangle ABC = $ .... cm^2

9) If the ratio of enlargement for two similar triangles equal one, then the two triangle are ....

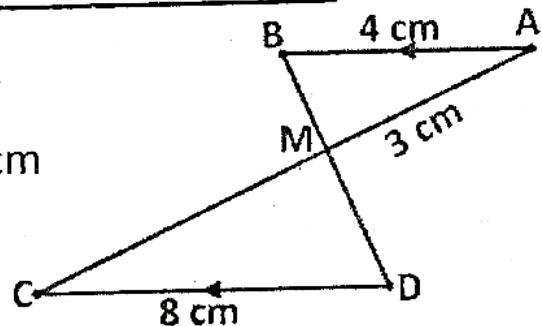**10)** The isosceles triangle has .... Axes of symmetry

[Q3] A) In the opposite figure:

$\overline{AD}$ // $\overline{BC}$, area of $\triangle$ ABM = area of $\triangle$ MCE

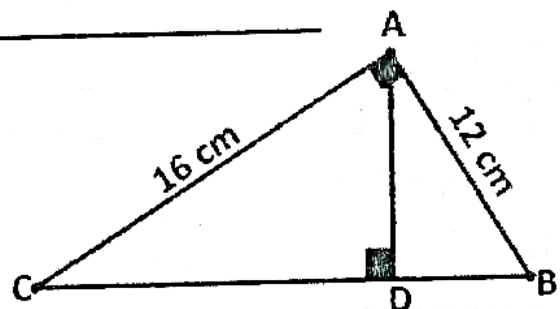Prove that: $\overline{AC}$ // $\overline{DE}$

B) In the opposite figure:

$\overline{AB}$ // $\overline{DC}$, $\overline{AC} \cap \overline{BD}$ = {M}, AB = 4 cm

MA = 3 cm, DC = 8 cm

Prove that: $\triangle$ MAB $\simeq$ $\triangle$ MCD

[Q4] A) The area of trapezium is 80 cm², its height 8 cm, length of one of its parallel bases is 15 cm, find the length of other base.

B) In the opposite figure:

$\triangle$ ABC right at $\angle$ BAC, $\overline{AD} \perp \overline{BC}$,

AB = 12 cm, AC = 16 cm

Find length of $\overline{BC}$, $\overline{AD}$

[Q5] A) In $\triangle$ LMN, LM = 5 cm, MN = 7 cm , LN = 6 cm, determine the type of triangle according to its angles

B) In the opposite figure:

$\triangle$ ABC is right at ($\angle$ B), $\overline{DE}$ // $\overline{AC}$,

DB = 5 cm , EC = 8 cm

↳ Find the area of $\triangle$ FDE

End of the questions

GEOMETRY – MODEL No 8

[Q1] *Choose the correct answer:*

(1) The two triangle are equal in area and drawn in same base in one side of it, then their vertices on straight line .... base
a) Perpendicular
b) Bisects
c) Parallel
d) Transversal

(2) The area of triangle whose base 8 cm and its corresponding height 5 cm = ...cm^2
a) 80
b) 40
c) 20
d) 10

(3) The angles of two similar polygons are .... measure
a) Equal
b) Different
c) Proportional
d) Alternative

(4) ....is a parallelogram with perpendicular diagonal
a) Square
b) Rectangle
c) Rhombus
d) Trapezium

(5) The two base angle of an isosceles triangle are ....
a) Complementary
b) Supplementary
c) Adjacent
d) Congruent

(6) The area of square whose diagonal 8 cm equal .... Cm^2
a) ....
b) ....
c) ....
d) ....

[Q2] **Complete each of the following:**

6) The area of rhombus equals half product of ....

7) In $\triangle XYZ$, $(XY)^2 = (YZ)^2 - (XY)^2$, then m ($\angle$ ......) = 90°

8) If A $\in$ straight line L, then projection of A on L is ....

9) $\triangle ABC \simeq \triangle XYZ$, and AB = 5 cm , XY = 3 cm
Then perimeter of $\triangle$ ABC : perimeter of $\triangle$ XYZ = ... : ....

10) The lengths of two parallel bases in trapezium are 10 cm, 6 cm, then the length of its middle base is .... c m

[Q3] **A)** Find the height of rhombus whose area 96 cm² and lengths of its diagonals 12 cm, 16 cm

B) In the opposite figure:
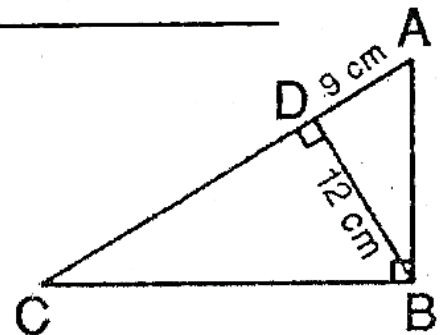
$\triangle ABC$ right at B, $\overline{BD} \perp \overline{AC}$,
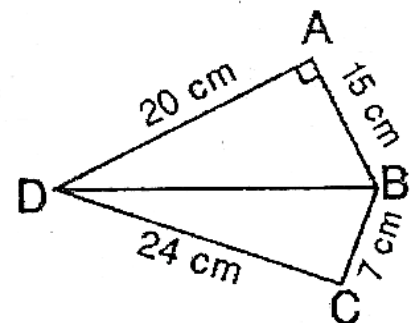If BD = 12 cm, AD = 9 cm
Find length of $\overline{DC}$

[Q4] **A)** In the opposite figure:

$m(\angle A) = 90°$, AB = 15 cm, AD = 20 cm
BC = 7 cm, CD = 24 cm
Prove that: $m(\angle C) = 90°$

B) Find the area of trapezium with two parallel bases 8 cm, 10 cm and its height 6 cm

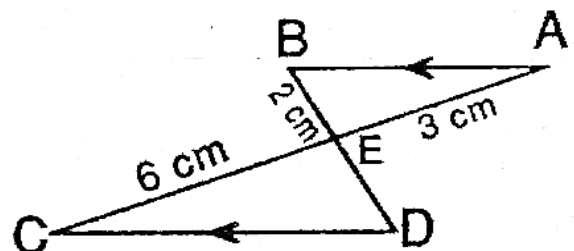**[Q5]** **A)** In the opposite figure:

$\overline{AB} // \overline{CD}$, $\overline{AC} \cap \overline{BD} = \{E\}$
AE = 3 cm, BE = 2 cm, CE = 6 cm
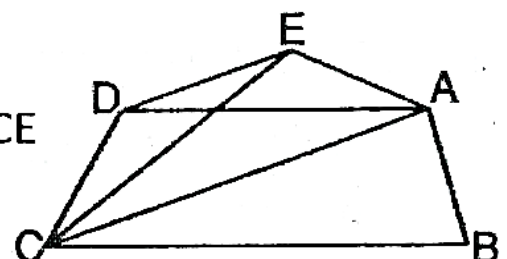① Prove that: $\triangle ABE \simeq \triangle CDE$
② Find the length of $\overline{ED}$

B) In the opposite figure:

Area of figure ABCD = area of figure ABCE

Prove that: $\overline{AC} // \overline{ED}$

End of the questions

GEOMETRY — MODEL No (9)

[Q1] *Choose the correct answer:*

(1) Area of square of diagonal 10 cm is .... Cm^2
a) 100   b) 50   c) 40   d) 20

(2) In $\triangle ABC$, $(AC)^2 = (AB)^2 + (BC)^2 + 9$, then m $(\angle B)$ ....$90°$
a) >   b) =   c) <   d) $\leq$

(3) In $\triangle ABC$, $\overline{AD} \perp \overline{BC}$, then projection of $\overline{AD}$ on $\overleftrightarrow{BC}$ is ....
a) $\overline{BD}$ b) $\overline{CD}$ c) $\overline{BC}$ d) { D }

(4) The area of rhombus 42 cm^2 and one of its diagonals 12 cm, then the other diagonal is ....
a) 14   b) 7   c) 3.5   d) 2

(5) In a Parallelogram, length of two adjacent sides 7 cm , 9 cm and smaller height 4 cm, then its area .... cm^2
a) 14   b) 18   c) 28   d) 36

(6) In $\triangle ABC$ right at B, m $(\angle C) = 30°$, AB = 5 cm, then AC = ... cm
a) 5   b) $5\sqrt{3}$ c) 10   d) 15

[Q2] Complete each of the following:

6) If the drawing scale of two similar triangles 2 : 3 and measure of one of angles of smaller triangle is $80°$, then the measure of corresponding angles in greater triangle equals ....$°$

7) The measure of two supplementary angles is ....$°$

8) If $\triangle ABC \simeq \triangle XYZ$ and m$(\angle B) = 30°$, m$(\angle Z) = 50°$, then m $(\angle X) =$..

9) Length of projection of line segment on straight line parallel to it .... Length of line segment

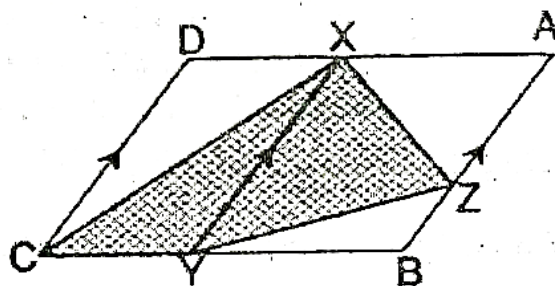**10)** If a straight line cut two parallel lines, then each two alternative angles are ....

[Q3] A) In the opposite figure:

ABCD is a Parallelogram,
And $\overline{XY} // \overline{AB} // \overline{DC}$
Prove that:

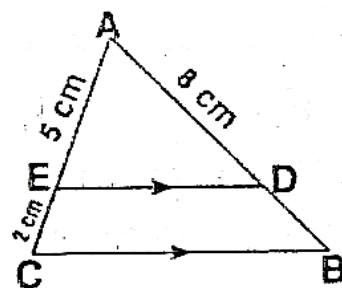Area of figure XZYC = $\frac{1}{2}$ area of Parallelogram ABCD

B) In the opposite figure:

$\overline{DE} // \overline{BC}$, AE = 5 cm , EC = 2 cm
AD = 8 cm, prove that: $\triangle$ ABC $\simeq$ ADE
Then find the length of $\overline{BD}$

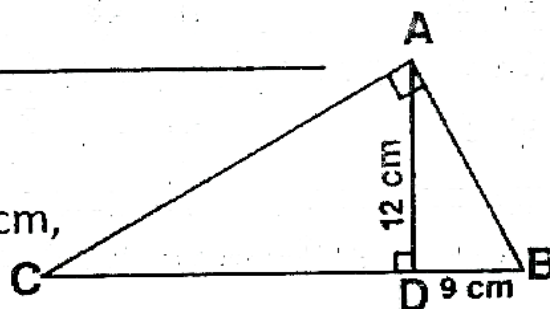**[Q4] A)** Find the height of a trapezium whose middle base 12 cm and
its surface area 60 cm^2, if one of its bases is twice the other,
find length of each one?

B) In the opposite figure:

$\triangle$ ABC right at B, $\overline{AD} \perp \overline{BC}$, AD = 12 cm,
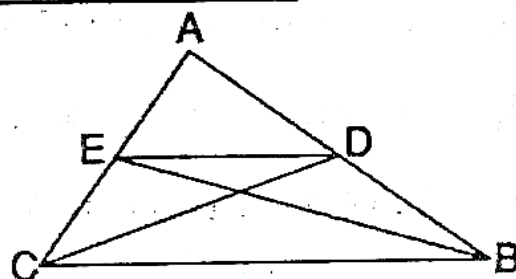BD = 9 cm, Find length of $\overline{DC}$, $\overline{AC}$

[Q5] A) Determine the type of triangle according to its angles if its
sides lengths are AB = 10 cm, AC = 6 cm, BC = 8 cm

B) In the opposite figure:

Area of $\triangle$ ABE = area of $\triangle$ ADC

Prove that: $\overline{DE} // \overline{BC}$

End of the questions

GEOMETRY — MODEL No 10

[Q1] *Choose the correct answer:*

(1) Area of triangle equal .... Area of Parallelogram with common base and between two parallel lines one of them carrying this base

a) Same   b) Half   c) Double   d) Quarter

(2) The height of triangle whose area 36 cm^2 and its base 9 cm is..

a) 2 cm   b) 4 cm   c) 8 cm   d) 12 cm

(3) Length of projection of line segment on straight line parallel to it .... Length of line segment

a) >   b) =   c) <   d) $\leq$

(4) Area of square whose diagonal 6 cm is .... cm^2

a) 12   b) 18   c) 36   d) 72

(5) Sum of interior angles of triangle is ....^{o}

a) 180   b) 360   c) 540   d) 720

(6) An isosceles triangle has ....axes of symmetry

a) Zero   b) One   c) Two   d) Three

[Q2] Complete each of the following:

6) The median of triangle divide it into two triangles ....

7) $\triangle$ ABC, AB = 8 cm, BC = 6cm, AC = 10 cm, type of $\angle$A is.............

8) The base of Parallelogram whose area 42 cm^2 and its height 6cm is ....

9) Two triangles are similar if their angles ....

10) If the ratio of similarity between two triangles equal one, then two triangles are ....

[Q3] A) In the opposite figure:

$\overline{AD} \parallel \overline{BC}$, $\overline{BE} = \overline{FC}$

Prove that:

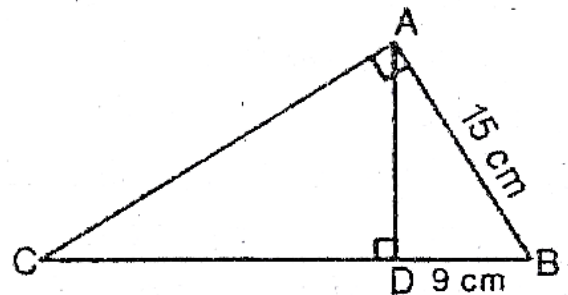Area of figure ABEM = area of figure DCFM

B) In the opposite figure:

$\triangle ABC$ is right at A, $\overline{AD} \perp \overline{BC}$
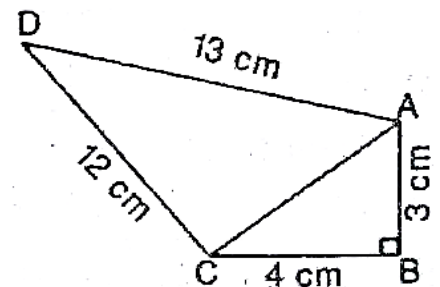
If AB = 15 cm, BD = 9 cm

Find length of BC

[Q4] A) In the opposite figure:

m $(\angle B) = 90°$, AB = 3 cm, BC = 4 cm

DA = 13 cm, DC = 12 cm

Prove that: m $(\angle ACD) = 90°$

B) Find height of a trapezium whose area 40 cm², and lengths of its two parallel bases are 7 cm , 9 cm
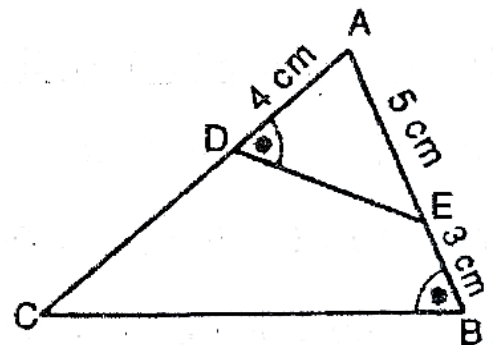
[Q5] A) In the opposite figure:

AE = 5 cm, AD = 4 cm, BE = 3 cm

And m $(\angle B)$ = m $(\angle ADE)$

① Prove that: $\triangle ABC \simeq \triangle ADE$

② Find length of $\overline{DC}$

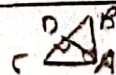**B) Find the area of rhombus whose diagonals 8 cm, 6 cm and find length of its height.**

End of the questions

GEOMETRY — MODEL No. 1

[Q1] Choose the correct answer:

(1) If area of rhombus 40 cm^2, one of its diagonals 10 cm, then the length of other diagonal .... cm

a) 5   b) 6   c) 8   d) 10

(2) If the area of square 50 cm^2, then length of its diagonal ...... cm

a) 5   b) 10   c) 25   d) 100

(3) In $\triangle$ ABC, if $(AB)^2 - (BC)^2 = (AC)^2$, then m ($\angle$ B) ....□

a) Acute   b) Right   c) Obtuse   d) Straight

(4) If area of triangle 30 cm^2, its height 5 cm, then its base .... Cm

a) 6   b) 12   c) 18   d) 5

(5) Projection of point (5 , 3) on X – axis is ....

a) (5 , 3)   b) (–5 , 3)   c) (5 , 0)   d) (0 , 3)

(6) If the drawing scale of two similar triangles 1 : 2 and measure of one of angles of smaller triangle is 50°, then the measure of corresponding angles in greater triangle equals ....°

a) 25   b) 50   c) 100   d) 150

[Q2] Complete each of the following:

6) Area of Parallelogram 30 cm^2, its base 6 cm, its height ....5...Cm

7) In $\triangle$ ABC right at A, $\overline{AD} \perp \overline{BC}$, then AB × AC = BC × AD ....

8) Area of Parallelogram equal ..Twice.. (double) Area of triangle with common base and between two parallel lines one of them carrying this base

9) Two triangles area similar if their corresponding sides are .Proportional

10) The median of triangle divide it into two triangles ..Equal in area

CamScanner

[Q3] A) In the opposite figure:

ABCD is square of side 12 cm,

CF = 3 cm, $\overline{AE} \cap \overline{CD} = \{F\}$

① Prove that: $\triangle ADF \simeq ECF$

② Find length of $\overline{EC}$ — 4 cm

Handwritten work:
$ECF = 90°$, $ADF = 90°$
$AFD = EFC$ (V.O.A)
∴ $ADF \sim ECF$
$\frac{EC}{AD} = \frac{FC}{FD}$
$\frac{EC}{12} = \frac{3}{9}$
$= \frac{12 \times 3}{9} = 4 cm$
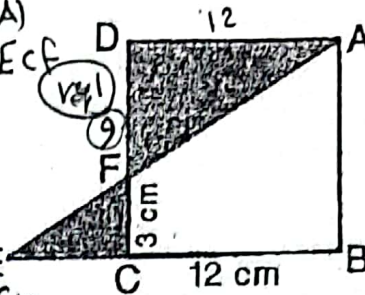
B) In the opposite figure:

If area of $\triangle DBM$ = area of $\triangle CME$

And m ($\angle AED$) = 70°

Find m ($\angle ACB$) — 70°

Handwritten work:
by Adding (BMD)
∴ BDM = CEB
∴ ED // CB
∴ AED = ACB = 70°
Corresponding Angles
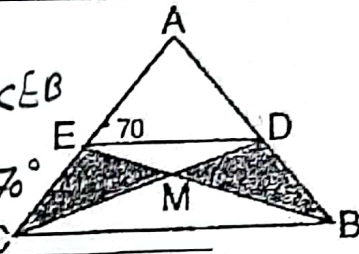
[Q4] A) The ratio between two parallel bases in a trapezium 2 : 3,

and length of its middle base 30 cm, find:
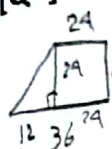
① Length of its bases — 24 cm , 36 cm

② Area of trapezium if its height 24 cm — 720 cm²

Handwritten work:
2 : 3 : 5
24 : 36 : 60
24 × 24 = 576
½ × 12 × 24 = 144 → = 720

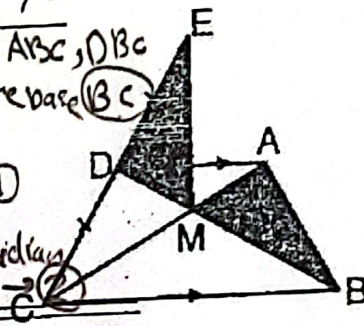**B)** In the opposite figure:

$\overline{AD} // \overline{BC}$, D midpoint of $\overline{BC}$

Prove that:

Area of $\triangle ABM$ = area of $\triangle DME$

Handwritten work:
∵ AD // BC and $\triangle ABC, DBC$ same base BC
∴ area ABC = DBC
By subtract mBC
∴ AmB = DmC → ①
in $\triangle EMC$ MD is median
∴ MED = DmC → ②
From ① ②

[Q5] A) Determine the type of triangle according to its angles if its
sides lengths are AB = 8 cm, AC = 6 cm, BC = 7 cm

Handwritten work:
$(8)^2 = 64$
$(6)^2 + (7)^2 = 85$
$(AB)^2 < (AC)^2 + (BC)^2$ ∴ Acute

B) In the opposite figure:
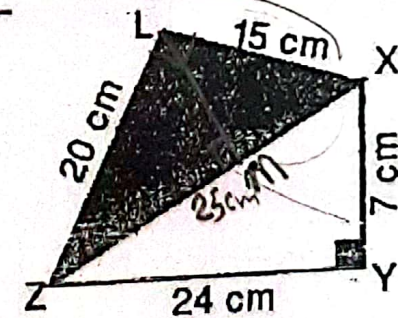
M ($\angle XYZ$) = 90°, $\overline{LM} \perp \overline{XZ}$, XL = 15 cm

ZL = 20 cm, XY = 7 cm, YZ = 24 cm

① Prove that: m ($\angle XLZ$) = 90°

② Find length of $\overline{LM}$, XM — 9 cm

Handwritten work:
$LM = \frac{LX \times LZ}{ZX} = 12$
XM = 9 cm

End of the questions

Handwritten work (right side):
ZY = 25 cm
$(ZY)^2 \quad (LX)^2 + (LZ)^2$
$625 = 400 + 225$

Handwritten work (bottom):
∴ $(ZX)^2 = (LX)^2 + (LZ)^2$
∴ $\angle XLZ = 90°$

GEOMETRY – MODEL NO (2)

$A = \frac{1}{2}d^2$

[Q1] Choose the correct answer:

(1) The diagonal of square whose area 50 cm² is ...... Cm
a) 10 b) 20 c) 30 d) 40

(2) If the ratio between two similar triangles 1 : 3 and length of sides of greater triangle is 12 cm, then the length of corresponding side in smaller triangle equals .... cm
a) 4 b) 6 c) 12 d) 24

(3) In △ABC, $(AB)^2 - (BC)^2 > (AC)^2$, then ∠B ....
a) Acute b) Right c) Obtuse d) Straight

(4) Length of two parallel bases in trapezium 10 cm, 6 cm, its height 5 cm, then its area = ... cm²
a) 10 b) 30 c) 40 d) 80

(5) if area of rhombus 48 cm², length of one of its diagonals 12 cm, then length of other diagonal is .... Cm
$A = \frac{1}{2} \times d_1 \times d_2$
a) 4 b) 8 c) 10 d) 16

(6) In the opposite figure:
BX = XC
Area of △ AXC = ... area of ABCD
a) $\frac{1}{2}$ b) $\frac{1}{4}$ c) $\frac{1}{8}$ d) 2

[Q2] Complete each of the following:
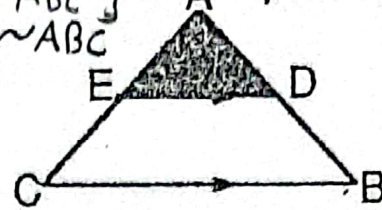
6) Length of projection of line segment on straight line parallel to it Equal to Length of line segment

7) Two similar polygons two third are Similar

8) Two triangles on same base and its vertices on straight line parallel to base are Equal in area

9) Projection of point (5 , 3) on y axis is point (0, 3) or 3

10) Two diagonals of an isosceles trapezium are Equal in length

∴ ∠A Common

∠AED = ∠ACB ⎫ Corresponding Angles
∠ADE = ABC ⎭
∴ △ADE ~ △ABC

[Q3] A) **In the opposite figure:**
$\overline{DE} // \overline{BC}$, DE = 6 cm, AD : AB = 1 : 3
① Prove that: △ ADE ≃ △ ABC
② Find length of $\overline{BC}$ |8 cm $\frac{6}{BC} = \frac{1}{3}$

B) **In the opposite figure:**
Area of △ ADB = area of △ XDE   AD is median
And DB = DC,   ∴ area ABD = ADC
Prove that: XC // AE   ∴ ADC = XDE
by subtract (XDC)
∴ Area AXC = EXC
Common base XC
∴ XC // AE
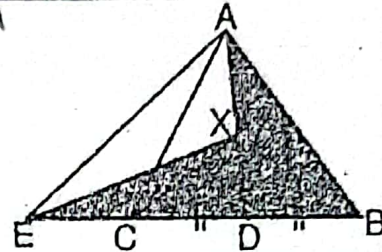
[Q4] A) **In the opposite figure:** $(19)^2 > (8)^2 (15)^2$
ABCD is Parallelogram,   361 > 289
BC = 15 cm, DC = 8 cm, AC = 19 cm   ∴ B obtuse
Prove that: ∠ ABC is obtuse angle
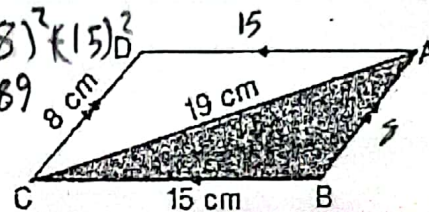
B) **In the opposite figure:**   E ∈ $\overline{AB}$
ABCD is Parallelogram   F ∈ $\overline{AD}$
Prove that: Area ABCD = FEBC   ∴ EFCB is Parallelogram
Area of △ AXB = area of △ XCF   Subtract XCB
∴ AXB = XCF
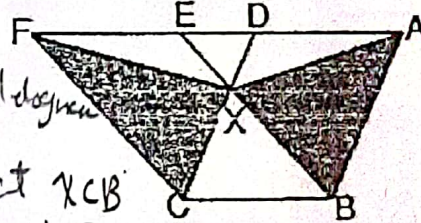
[Q5] A)   Find the area of rhombus whose perimeter 60 cm and
measure of one of its angles is 60° $\frac{1}{2} \times 7.5 \times 13 = 48.75$
48.75 × 4 = 195 cm²

B) **In the opposite figure:**
ABCD is quadrilateral, $\overline{AE} \perp \overline{BD}$
m (∠ BCD) = m (∠BAD) = 90°, **Find:**
① Length of $\overline{AD}$, $\overline{BD}$ 20 cm , 25cm
② Length of projection of $\overline{AB}$ on $\overline{BD}$ 9 cm
③ Length of projection of $\overline{AD}$ on $\overline{AE}$ 12 cm

End of the questions

GEOMETRY — MODEL No ③

[Q1] Choose the correct answer:

(1) Perimeter of rhombus of diagonals 12 cm , 16 cm is ....cm

a) 10   b) 40   c) 96   d) 192

(2) Length of projection of line segment on straight line parallel to it .... length of original line segment.

a) >   b) =   c) <   d) $\leq$

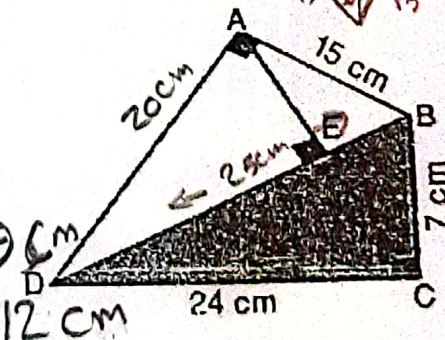(3) Area of rectangle whose sides 8 cm , 4 cm = ...cm^2

a) 16   b) 24   c) 32   d) 64

(4) Sum of interior angles of quadrilateral = ...°

a) 180   b) 360   c) 540   d) 720

(5) Measure of exterior angle of an equilateral triangle = ...°

a) 60   b) 120   c) 180   d) 360

(6) Area of square whose perimeter 12 cm is ....cm^2

a) 72   b) 144   c) 3   d) 9

[Q2] Complete each of the following:

6) The triangles with equal bases and lay on same straight line and have common vertex are...equal...in area

7) In $\triangle$ ABC, AB = 8 cm, BC = 5 cm, AC = 4 cm, then $\triangle$ ABC is ...obtuse

8) If the length of two adjacent sides in Parallelogram are 5 cm , 9 cm, and its smaller height is 7 cm, then its area ....6.3....cm^2

9) Two triangles are similar if their corresponding sides are...proportional

10) The area of a square formed on one of the right sides of a right–angled triangle is equal to the area of the rectangle whose dimensions project of this side on hypotenuse and the length of ...hypotenuse

$\triangle ABC = \triangle DBC$
in $\triangle MBC$ ME is median
$\therefore \triangle MBE = \triangle MCE$

[Q3] A) In the opposite figure:
$ABM = DCm$

$\overline{AD} // \overline{BC}$, E is midpoint of $\overline{BC}$

Prove that:

✓ Area of ABEM = area of DCEM
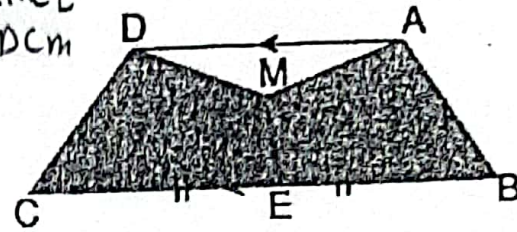
B) In the opposite figure:

$\triangle ABC$ right at A, $\overline{AD} \perp \overline{BC}$,
BD = 9 cm, CD = 16 cm

Find length of $\overline{AB}$

$(AD)^2 = 16 \times 9 = 144$
$AD = 12 cm$
$(AB)^2 = 144 + 81$
$AB = 15 cm$
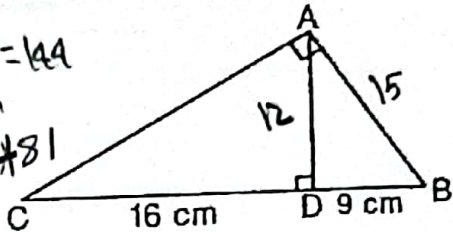
[Q4] A) In the opposite figure:
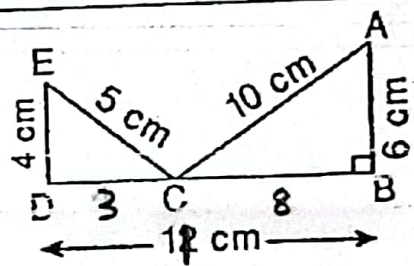
$m(\angle B) = 90°$, AB = 6 cm, AC = 10 cm
ED = 4 cm, EC = 5 cm, BC = 12 cm
Prove that: $m(\angle D) = 90°$

B) Two similar triangles, perimeter of the first 54 cm, lengths of sides of other triangle 5, 6, 7 cm, find the sides lengths of first triangle

$\frac{18}{54} = \frac{1}{3}$

$1 : 3$
$5 : 15$
$6 : 18$
$7 : 21$

15, 18, 12

[Q5] A) In the opposite figure:

Area of $\triangle ABE$ = area of $\triangle ACD$ by subtract
$\triangle AED$
Prove that:
$\overline{DE} // \overline{BC}$
$\therefore \triangle BED = \triangle CED$
$\therefore EDllBC$
ED is common base
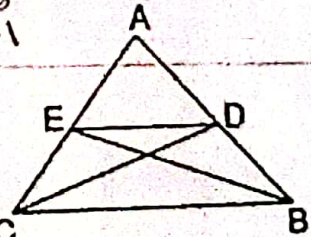
B) Find the middle base of a trapezium whose area 110 cm² and its height 10 cm.

$110 = m.b \times 10$

m.b = 11 cm

(End of the questions

GEOMETRY – MODEL No 4

[Q1] Choose the correct answer:

(1) Area of square whose side 12 cm is ....cm²

a) 36   b) 48   c) 72   d) 144

(2) In △ ABC, if $\overline{AD} \perp \overline{BC}$, then projection of point A on $\overrightarrow{BC}$ is ....
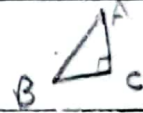
a) {D}   b) $\overline{BD}$ c) $\overline{CD}$ d) $\overline{BC}$

(3) Measure of exterior angle o equilateral triangle is ....°

a) 30   b) 60   c) 120   d) 360

(4) The triangle of sides 5 cm , 8 cm , 12 cm is ....triangle

a) Right   b) Acute   c) Obtuse   d) Isosceles

(5) In △ ABC: $(AB)^2 = (BC)^2 + (AC)^2 + 5$, then m $(\angle C)$ ......90°

a) >   b) =   c) <   d) ≤

(6) The area of rhombus 100 cm², its diagonal 10 cm, the other diagonal is .... cm

a) 2   b) 5   c) 10   d) 20

[Q2] Complete each of the following:

6) If the ratio between two similar triangles 2 : 3 and measure of one angle smaller triangle is 20°, then the measure of corresponding angle in greater triangle equals ..20..°

7) Area of Parallelogram equals ..double.. area of triangle with common base and lies between two parallel lines

8) In the opposite figure:
AB = 5 cm , AC = 10 cm
EC = 8 cm, then BD = ...12....... cm

AEC ~ AOB
$\frac{AC}{AB} = \frac{AE}{AD} = \frac{EC}{OB}$
$\frac{10}{dh} = \frac{8}{OB}$
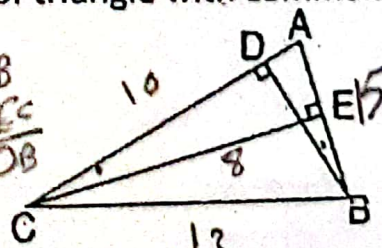
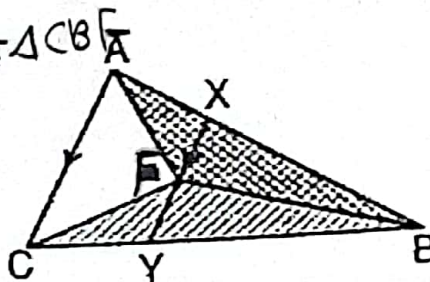**9)** Sum of measures of two complementary angles is ...90..°

10) Two triangles are similar if their corresponding sides are ..proportional..

$\because fx = fy \, \& \, AC // XY \quad \therefore Areas \triangle AXF = \triangle CYF \to \textcircled{1}$
$\because BF \, median \quad \therefore area \triangle BFx = \triangle BFy \to \textcircled{2}$

From ① and ② by adding:

[Q3] A) **In the opposite figure:** $\therefore \triangle ABF = \triangle CB \, ?$

$\overline{AC} // \overline{XY}$, F midpoint of $\overline{XY}$

Prove that:

Area of $\triangle ABF$ = area of $\triangle CBF$

B) **In the opposite figure:**

DE // BC, AE = 5 cm

EC = 2 cm, AD = 8 cm

① Prove that: $\triangle ABC \simeq ADE$

② Find length of $\overline{BD}$

11,2 cm

∠A Common
∠AED = ∠ACB
∠ADE = ∠ABC
Corress ponding
$\therefore ABC \sim ADE$
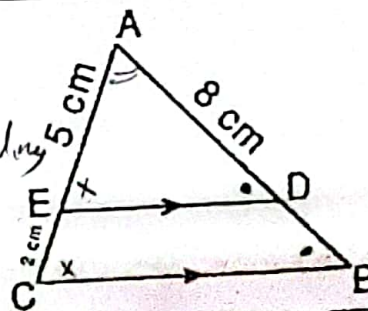
$\dfrac{AE}{AC} = \dfrac{AD}{AB}$

$\dfrac{5}{7} = \dfrac{8}{AB}$

[Q4] A) Area of trapezium 180 cm², its height 12 cm, ratio between its two parallel bases 3 : 2, find length of each one $\boxed{12, 18 \text{ cm}}$

$180 = m \cdot b \times 12$
$m \cdot b = 15$
$\dfrac{3 \cdot b + 5 \cdot b}{2} = 15 \quad 3 \cdot b + 5 \cdot b = 30 \quad 3 : 2 : 5 \quad \dfrac{12+18}{30}$

B) **In the opposite figure:**

ABCD, AEFD are two Parallelograms

Prove that:

Area of $\triangle ABM$ = area of $\triangle DFM$

ABCD = AEFD, by subtract (AMD)
$\therefore ABM = DFM$
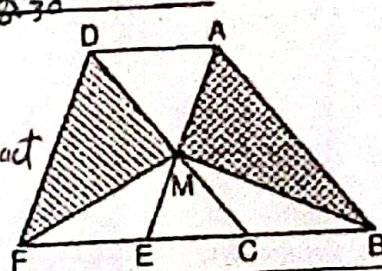
[Q5] **In the opposite figure:**

ABCD is quadrilateral, m($\angle B$) = 90°

$\overline{DE} \perp \overline{AC}$, AB = 7 cm, BC = 24 cm

CD = 15 cm, DA = 20 cm

Find:

① Length of $\overline{AC}$ 25 cm

② Prove that m($\angle ADC$) = 90°

③ Find length of projection of $\overline{DC}$ on $\overline{AC}$ $\overline{CE} = 9$ cm

$(AC)^2 = (CD)^2 + (AD)^2$
$625 = 225 + 400$

End of the questions

$DE = \dfrac{20 \times 15}{25} = 12$

$(CE)^2 = 225 - 144 = 81$
$CE = 9$ cm

GEOMETRY – MODEL No 5

[Q1] Complete each of the following:

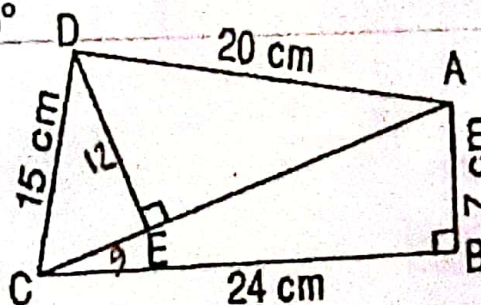6) The area of rhombus 48 cm², its diagonal 12 cm, the other diagonal is ....8...... cm

7) In △ ABC, AB = 5 cm, BC = 7 cm, CA = 11 cm, then m (∠B) is .obtuse

8) Two similar triangles, sides of first one 4 , 6 , 8 cm, perimeter of the other 72 cm, then the sides of the other 16., 24, 32 cm

9) The median of triangle divide it into two triangles equal in area

10) **In the opposite figure:**
    △ ABC, m (∠ABC) =90°, $\overline{BD} \perp \overline{AC}$
    ① Then projection of $\overline{AB}$ on $\overline{AC}$ is AD..
    ② (BC)² = CD.. × ..CA......
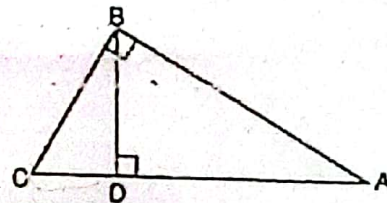
[Q2] Choose the correct answer:

(1) Area of triangle 24 cm², its height 8 cm, then its base ....cm
a) 2   b) 3   c) 6   d) 16

(2) ABCD is a Parallelogram, E ∈CD, area of △ AEB = 20 cm², then area of Parallelogram ABCD = ...cm²
a) 10   b) 20   c) 30   d) 40

(3) A trapezium length of its parallel bases 5 cm , 7 cm, its area 42 cm, then its height = ... cm
a) 5   b) 6   c) 7   d) 12

(4) In △ ABC, AB = 7 cm , BC = 5 cm , AC = 4 cm, then ∠ C ....
a) Acute   b) Obtuse   c) Right   d) Straight

(5) If length of rectangle 12 cm , its diagonal 13 cm, the its area .....
a) 144 cm²   b) 169 cm²   c) 156 cm²   d) 60 cm²

AE // DC

∠EAF = FDC ?
∠AEF = DCF
∠EFA = DFC → Corresponding Angles

[Q3] **A)** **In the opposite figure:**

ABCD is Parallelogram, E ∈ $\overrightarrow{BA}$ △△AEF ~ DCF

$\overline{CE} \cap \overline{AD}$ = { F }, BC = 12 cm,

AB = 6 cm, FD = 8 cm, FC = 7 cm

① **Prove that:** △ AEF ≅ △ DCF

② Find length of $\overline{EB}$, $\overline{EF}$ 3.5 cm

   9 cm

B) **In the opposite figure:**

△MBX = m CY

△AMB = △DMC   By Adding

$\overline{AD} // \overline{BC}$, $\overline{AC} \cap \overline{BD}$ = { M }

X,Y ∈ $\overline{BC}$, BX = CY, **prove that:**

Area of ABXM = area of DCYM

[Q4] **A)** ABCD is a Parallelogram, AB = 8 cm, AC = 20 cm, BD = 12 cm,

① **Prove that** m (∠ ABD) = 90° ∵ $(10)^2 = (8)^2 + (6)^2$ ∴ ABC = 90°

② Find area of Parallelogram ABCD;

Area = 8×12 = 96 cm²

B) **In the opposite figure:** △DYB = △CYD

△XBD = △BCX

ABCD is Parallelogram, X ∈ $\overline{AB}$, Y ∈ $\overline{AD}$,

Area of △ BCX = area of △ CYD

∴ DYB = XBD

Prove that: $\overline{XY} // \overline{BD}$ BD Common base , ∴ YX // DB

[Q5] **In the opposite figure:**

ABCD is quadrilateral,

m (∠ BCD) = m(∠BAD) = 90°

$\overline{AE} \perp \overline{BD}$, BC = 7 cm, CD = 24 cm

AB = 15 cm, Find:

① Length of $\overline{BD}$, $\overline{AD}$ 25, 20

② Find length of projection of $\overline{AB}$ on $\overleftrightarrow{BD}$

③ Find length of projection of $\overline{AD}$ on $\overleftrightarrow{AE}$ $AE = \dfrac{15 \times 20}{25} = 12$ cm

End of the questions

GEOMETRY – MODEL No 6 N

[Q1] Choose the correct answer:

(1) The area of square whose diagonal 8 cm is .... cm^2

a) 128   b) 64   c) 32   d) 16

(2) The side lengths 4 cm , 5 cm , 3 cm are sides of .... triangle
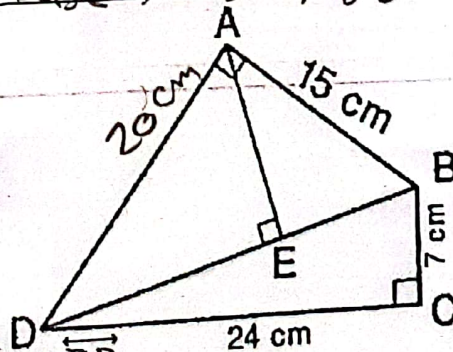
a) Isosceles   b) Acute   c) Right   d) Obtuse

(3) If the projection of line segment on a straight line is a point, then the line segment .... on straight line

a) Parallel   b) Perpendicular   c) Coincide   d) bisects

(4) If the area of a rhombus is 40 cm^2, and length of one of its diagonals is 10 cm, then the other diagonal is .... cm

a) 80   b) 50   c) 4   d) 8

(5) The area of rectangle whose dimensions 4 cm , 9 cm .... the area of rhombus whose diagonals 12 cm, 5 cm

a) >   b) =   c) <   d) ≤

(6) The ratio between corresponding sides in two similar polygons is 1 : 3, if the perimeter of the smallest one 15 cm, then the perimeter of the greater polygon is .... cm

a) 5   b) 45   c) 60   d) 75

[Q2] Complete each of the following:

6) XYZL is a parallelogram, area of △ XYZ = 18 cm^2, then the area of parallelogram XYZL equals ....36......... cm^2

7) In △ ABC, if (AB −AC) (AB + AC) < $(BC)^2$, then ∠ C is ..acute

8) Two parallel straight lines to third are ..parallel

9) Number of axes of symmetry of an equilateral triangle is ...3..

10) If two triangles drawn on same base are equal in area, then its vertices on the straight line ..parallel..To The base

∴ CB Common and
NEAD

△NBC = ½ ABCD

"ABCD = ABEF

∴ △NBC = ½ ABEF

#

[Q3] A) In the opposite figure:

ABCD, ABEF are two parallelograms

Prove that:

Area of △ NBC = ½ area Parallelogram of ABEF

B) In the opposite figure:

△ ABC, D ∈ $\overline{AC}$. E ∈ $\overline{AB}$, m (∠AED) = m (∠C)

AE = 3 cm, AD = 4 cm; CD = 2 cm

① Prove that: △ ACB ~ △ AED

② Find the length of $\overline{EB}$

AB = 8

∴ A Common Angle

∠AEC = ∠ACB

∴ △ADE = △ABC

△ACB ~ △AED

$\frac{AD}{AB} = \frac{AE}{AC}$

$\frac{4}{AB} = \frac{3}{8}$

[Q4] A) A trapezium of area 180 cm², its height 12 cm, the ratio
between length of its bases 3 : 2. Find length of its bases.

3:2:5
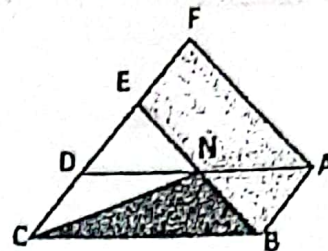
180 ÷ 12 = 30

18 & 12 Cm

B) In the opposite figure:

△ ABC if right triangle at A,

$\overline{AD} \perp \overline{BC}$, BD = 9 cm,

CD = 16 cm, find length of $\overline{AD}$, $\overline{AB}$, $\overline{AC}$

12   15   20

[Q5] A) △ XYZ, XY = 12 cm , YZ = 20 cm , XZ = 16 cm, determine the
type of triangle according to its angles

right angle

$(20)^2 = 400$ $(16)^2 + (12)^2$

= 400
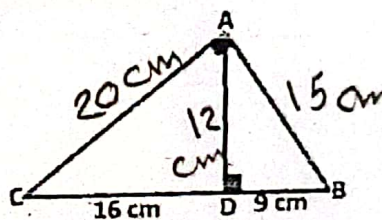
B) In the opposite figure:

△ ABC right at B, $\overline{ED}$ // $\overline{AC}$

AE = 2 cm , BC = 5 cm

Find area of △ AMC

∴ AC // ED ∴ AC Common base

∴ △ AEC = △ AMC

area △ AEC = ½ × b × h

= ½ × 2 × 5

= 5 cm²

∴ area △ AMC = 5 cm²

End of the questions

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GEOMETRY – MODEL No 7

[Q1] Choose the correct answer:

(1) The area of rhombus whose diagonals 10 cm , 12 cm is ..... cm^2

a) 240   b) 120   c) 60   d) 30

(2) In $\triangle$ ABC, $(AC)^2 = (AB - BC) (AB + BC)$, then m ($\angle$B) ....$90°$

a) >   b) $\geq$ c) =   d) <

(3) Two perpendicular straight line on third are ....

a) Parallel   b) Perpendicular   c) Coincide   d) Intersecting

(4) The length of diagonal of square whose area 50 cm^2 is .... cm

a) 100   b) 20   c) 10   d) 5

(5) Length of projection of line segment on straight line parallel to it .... length of line segment.

a) >   b) =   c) <   d) $\leq$

(6) If ABCD $\simeq$ XYZL, m($\angle$A) = 80°, m($\angle$Z) = 50°, m($\angle$D) = 120°, then m($\angle$B) = ...°

a) 90   b) 110   c) 130   d) 250

[Q2] Complete each of the following:

6) If $\triangle$ ABC $\simeq$ $\triangle$ XYZ, and AB : XY = 2 : 5, AC = 8 cm, then XZ = 20 cm

7) Area of square of side length 8 cm = ...64...... cm^2

8) In $\triangle$ ABC, D is midpoint of BC, Area of $\triangle$ ABD = 20 cm^2, then area of $\triangle$ ABC = ...40.... cm^2

9) If the ratio of enlargement for two similar triangles equal one, then the two triangle are ...Congruent

10) The isosceles triangle has ......1............ Axes of symmetry
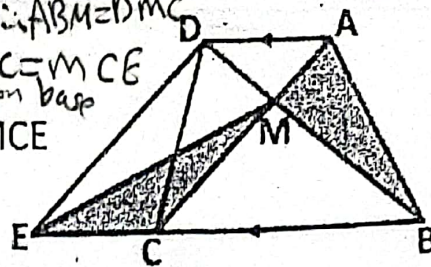
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(handwritten top annotations) $AD // BC$ (AD common **base**
∴ area $ABD = DCA$
by subtract AMD ∴ $ABM = DMC$

[Q3] **A)** **In the opposite figure:** ∵ area $DMC = MCE$
and cm common base

$\overline{AD} // \overline{BC}$, area of $\triangle ABM$ = area of $\triangle MCE$

Prove that: $\overline{AC} // \overline{DE}$ ∴ $\overline{AC} // \overline{DE}$ #

B) In the opposite figure: ∵ $AB // DC$ ∴ $\angle B = \angle D$
$\angle A = \angle C$
$\angle AMC = \angle CmD$

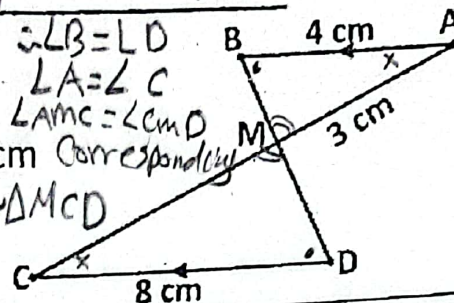$\overline{AB} // \overline{DC}$, $\overline{AC} \cap \overline{BD} = \{M\}$, AB = 4 cm Correspondly
MA = 3 cm, DC = 8 cm   ∴ $\triangle MAB \sim \triangle MCD$
Prove that: $\triangle MAB \simeq \triangle MCD$

[Q4] **A)** The area of trapezium is 80 cm², its height 8 cm, length of one of its parallel bases is 15 cm, find the length of other base. $80 = \left(\dfrac{15 + b_2}{2}\right) \times 8 = 5\,cm$
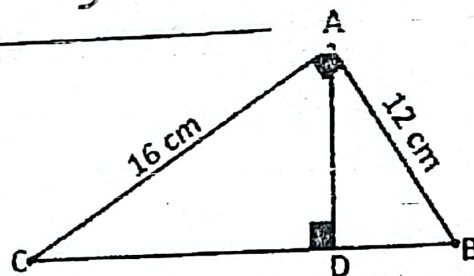
B) In the opposite figure:

$\triangle ABC$ right at $\angle BAC$, $\overline{AD} \perp \overline{BC}$,
AB = 12 cm, AC = 16 cm
Find length of $\overline{BC}, \overline{AD}$ 9.6 cm
20 cm

[Q5] **A)** In $\triangle LMN$, LM = 5 cm, MN = 7 cm, LN = 6 cm, determine the type of triangle according to its angles $(MN)^2 < (LN)^2 + (LM)^2$
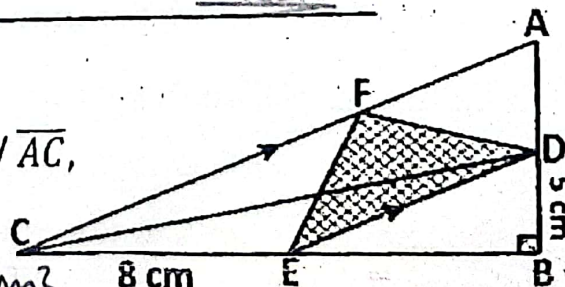$49 < 61$
acute

B) In the opposite figure:

$\triangle ABC$ is right at ($\angle B$), $\overline{DE} // \overline{AC}$,
DB = 5 cm, EC = 8 cm
↳ Find the area of $\triangle FDE$ 20 cm²

$\triangle FDE = \triangle CDE$
common base ED and
$CF // ED$ Area $\triangle CDE = \frac{1}{2} \times 8 \times 5 = 20\,Cm^2$

«End of the questions

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GEOMETRY – MODEL No. 8

[Q1] Choose the correct answer:

(1) The two triangle are equal in area and drawn in same base in one side of it, then their vertices on straight line .... base

a) Perpendicular   b) Bisects   c) Parallel   d) Transversal

(2) The area of triangle whose base 8 cm and its corresponding height 5 cm = ...cm^2

a) 80   b) 40   c) 20   d) 10

(3) The angles of two similar polygons are .... measure

a) Equal   b) Different   c) Proportional   d) Alternative

(4) ....is a parallelogram with perpendicular diagonal

a) Square   b) Rectangle   c) Rhombus   d) Trapezium

(5) The two base angle of an isosceles triangle are ....

a) Complementary   b) Supplementary   c) Adjacent   d) Congruent

(6) The area of square whose diagonal 8 cm equal ..32 Cm^2

a) ....   b) ....   c) ....   d) ....

[Q2] Complete each of the following:

6) The area of rhombus equals half product of ...its...diagonals

7) In $\triangle$ XYZ, $(XY)^2 = (YZ)^2 - (XY)^2$, then m ($\angle X$..) = 90°

8) If A $\in$ straight line L, then projection of A on L is ..itself..

9) $\triangle$ ABC $\simeq$ $\triangle$ XYZ, and AB = 5 cm , XY = 3 cm
   Then perimeter of $\triangle$ ABC : perimeter of $\triangle$ XYZ = ..5. : ..3

10) The lengths of two parallel bases in trapezium are 10 cm, 6 cm, then the length of its middle base is ......8..... cm

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base = $\sqrt{(8)^2+(6)^2}=\sqrt{100}=10$ cm

$h=\dfrac{A}{b}=\dfrac{96}{10}=9.6$ cm

[Q3] A) Find the height of rhombus whose area 96 cm² and lengths of its diagonals 12 cm, 16 cm

---

B) In the opposite figure:

△ ABC right at B, $\overline{BD} \perp \overline{AC}$,
If BD = 12 cm, AD = 9 cm
Find length of $\overline{DC}$

$(BD)^2 = AD \times DC$
$144 = 9 \times DC$
$DC = 16$ cm
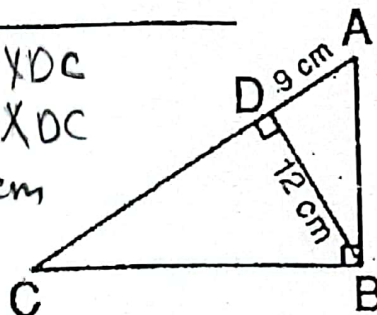
[Q4] A) In the opposite figure:

m(∠A) = 90°, AB = 15 cm, AD = 20 cm
BC = 7 cm, CD = 24 cm
Prove that: m(∠C) = 90°

$DB = \sqrt{400+225}$
$DB = 25$ cm
$625 = 49 + 576$
∴ ∠C = 90°
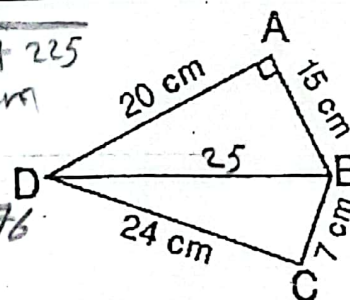
B) Find the area of trapezium with two parallel bases 8 cm, 10 cm and its height 6 cm

$A = \left(\dfrac{b_1+b_2}{2}\right)h = 9 \times 6 = 54$ cm²

[Q5] A) In the opposite figure:
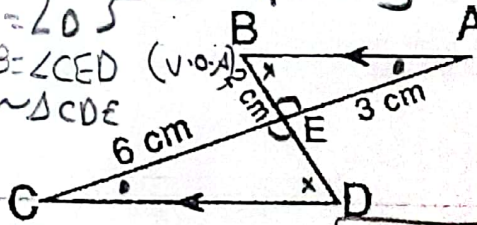
$\overline{AB} \parallel \overline{CD}$, $\overline{AC} \cap \overline{BD} = \{E\}$
AE = 3 cm, BE = 2 cm, CE = 6 cm
① Prove that: △ ABE ≃ △ CDE
② Find the length of $\overline{ED}$

∠A = ∠C ⎫ Corresponding
∠B = ∠D ⎭
∠AEB = ∠CED (v.o.A)
∴ △ABE ~ △CDE

$\dfrac{EB}{ED} = \dfrac{AE}{CE}$, $\dfrac{2}{ED} = \dfrac{3}{6}$, ED = 4 cm

B) In the opposite figure:

Area of figure ABCD = area of figure ABCE

Prove that: $\overline{AC} \parallel \overline{ED}$

∵ ABCD = ABCE
by subtract ABCE
∴ Area △ AEF = △ CDF
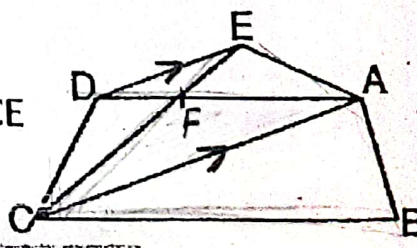∴ area △ ADE = △ CDE
by adding DEF and DE common base

End of the questions

∴ ED // AC

GEOMETRY — MODEL NO 9

[Q1] Choose the correct answer:

(1) Area of square of diagonal 10 cm is .... Cm^2

a) 100   b) 50   c) 40   d) 20

(2) In $\triangle ABC$, $(AC)^2 = (AB)^2 + (BC)^2 + 9$, then m $(\angle B)$ ....$90°$

a) >   b) =   c) <   d) ≤

(3) In $\triangle ABC$, $\overline{AD} \perp \overline{BC}$, then projection of $\overline{AD}$ on $\overleftrightarrow{BC}$ is ....

a) $\overline{BD}$ b) $\overline{CD}$ c) $\overline{BC}$ d) { D }

(4) The area of rhombus 42 cm^2 and one of its diagonals 12 cm, then the other diagonal is ....

a) 14   b) 7   c) 3.5   d) 2

(5) In a Parallelogram, length of two adjacent sides 7 cm , 9 cm and smaller height 4 cm, then its area .... cm^2

a) 14   b) 18   c) 28   d) 36

(6) In $\triangle ABC$ right at B, m $(\angle C) = 30°$, AB = 5 cm, then AC = ... cm

a) 5   b) $5\sqrt{3}$ c) 10   d) 15

[Q2] Complete each of the following:

6) If the drawing scale of two similar triangles 2 : 3 and measure of one of angles of smaller triangle is 80°, then the measure of corresponding angles in greater triangle equals ...80...°

7) The measure of two supplementary angles is ...180...°

8) If $\triangle ABC \simeq \triangle XYZ$ and m$(\angle B) = 30°$, m$(\angle Z) = 50°$, then m $(\angle X) = $ 100°

9) Length of projection of line segment on straight line parallel to it ...equal... Length of line segment

10) If a straight line cut two parallel lines, then each two alternative angles are equal in measure

$$\triangle XYZ = \frac{1}{2} ABYX \to \textcircled{1}$$

$$\triangle XYZ = \frac{1}{2} DCYX \to \textcircled{2}$$

by add ① + ②

[Q3] A) In the opposite figure:

∴ area XZYC = $\frac{1}{2}$ ABCD

ABCD is a Parallelogram,
And $\overline{XY} \parallel \overline{AB} \parallel \overline{DC}$
Prove that:

Area of figure XZYC = $\frac{1}{2}$ area of Parallelogram ABCD
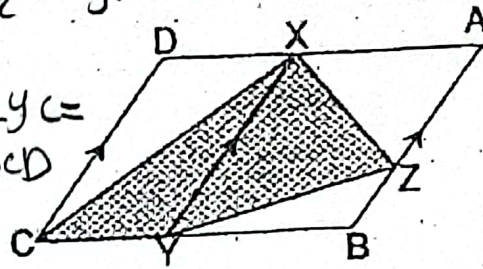
B) In the opposite figure:

$\begin{cases} \angle A \text{ Common} \\ \angle AED = \angle ACE \\ \angle ADE = \angle ABC \end{cases}$

∴ ABC ~ ADE

$\overline{DE} \parallel \overline{BC}$, AE = 5 cm, EC = 2 cm,
AD = 8 cm, prove that: $\triangle ABC \simeq ADE$
Then find the length of $\overline{BD}$ $\frac{AD}{AB} = \frac{AE}{AC}$

$\frac{8}{AB} = \frac{5}{7}$ AB = 11·2   DB = 3·2 cm
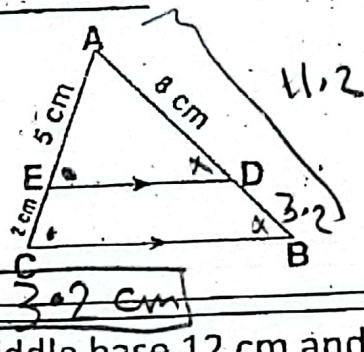
11·2

$\frac{5 \text{cm}}{2 \text{cm}}$ 8 cm   3·2

[Q4] A) Find the height of a trapezium whose middle base 12 cm and its surface area 60 cm², if one of its bases is twice the other, find length of each one?

$h = \frac{60}{12} = 5$ cm $\frac{x + 2x}{2} = 12$

8 cm   16cm   3x = 24 ∴ x = 8

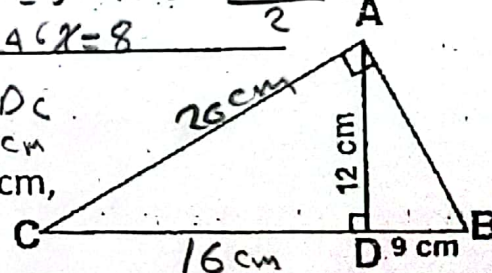**B) In the opposite figure:**

$(AD)^2 = 9 \times DC$
DC = 16 cm

$\triangle ABC$ right at A, $\overline{AD} \perp \overline{BC}$, AD = 12 cm,
BD = 9 cm, Find length of $\overline{DC}$, $\overline{AC}$

16, 20

20 cm   12 cm   16 cm   D. 9 cm

[Q5] A) Determine the type of triangle according to its angles if its sides lengths are AB = 10 cm, AC = 6 cm, BC = 8 cm

100 = 64 + 36   right angle

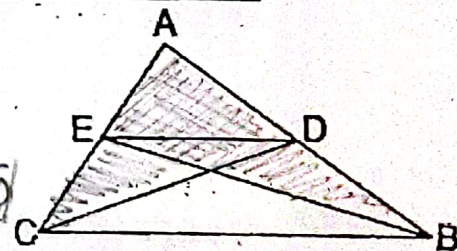**B) In the opposite figure:** ∵ ABE = ADC
by subtract ADE

Area of $\triangle ABE$ = area of $\triangle ADC$
∴ EDB = EDC
Prove that: $\overline{DE} \parallel \overline{BC}$ Same base ED

∴ DE // BC

End of the questions

GEOMETRY — MODEL No (10)

[Q1] Choose the correct answer:

(1) Area of triangle equal .... Area of Parallelogram with common base and between two parallel lines one of them carrying this base

a) Same   b) Half   c) Double   d) Quarter

(2) The height of triangle whose area 36 cm^2 and its base 9 cm is..

a) 2 cm   b) 4 cm   c) 8 cm   d) 12 cm

(3) Length of projection of line segment on straight line parallel to it .... Length of line segment

a) >   b) =   c) <   d) ≤

(4) Area of square whose diagonal 6 cm is .... cm^2

a) 12   b) 18   c) 36   d) 72

(5) Sum of interior angles of triangle is ....°

a) 180   b) 360   c) 540   d) 720

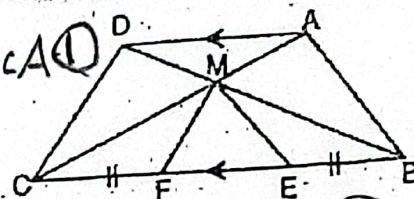(6) An isosceles triangle has ....axes of symmetry

a) Zero   b) One   c) Two   d) Three

[Q2] Complete each of the following:

6) The median of triangle divide it into two triangles _equal in area_

7) △ ABC, AB = 8 cm, BC = 6cm, AC = 10 cm, type of ∠A is _acute_

8) The base of Parallelogram whose area 42 cm^2 and its height 6cm is ...._7_.cm.............

9) Two triangles are similar if their angles _equal in measure_

10) If the ratio of similarity between two triangles equal one, then two triangles are .._Congruent_

(39)

[Q3] A) In the opposite figure:

$AD // BC$, $\overline{BE} = \overline{FC}$

Prove that:

Area of figure ABEM = area of figure DCFM

$\because AD // BC$

$\because DA$ Common base

$\therefore \triangle ABD = \triangle DCA$ ①

$\triangle MBE$, $M CF$

Common vertex and equal bases

$\therefore MBE = MDF$ ②

by Adding ① + ② $\therefore ABEM = DCFM$ #

B) In the opposite figure:

$\triangle ABC$ is right at A, $\overline{AD} \perp \overline{BC}$, $AD = 12$ cm

If $AB = 15$ cm, $BD = 9$ cm
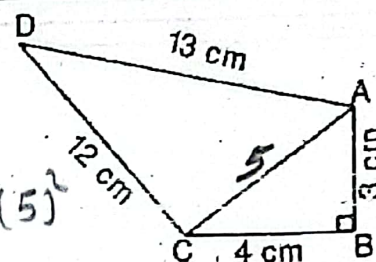
Find length of $BC = 25$ cm

$CD = \dfrac{144}{9} = 16$
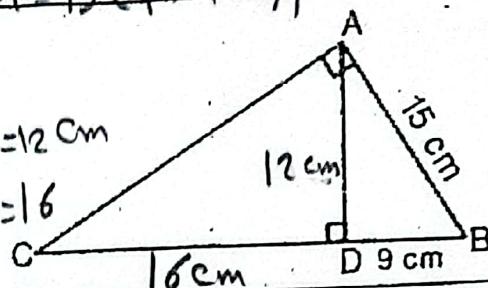
[Q4] A) In the opposite figure:

$m(\angle B) = 90°$, $AB = 3$ cm, $BC = 4$ cm

$DA = 13$ cm, $DC = 12$ cm

Prove that: $m(\angle ACD) = 90°$

$(13)^2 = (12)^2 + (5)^2$

$169 = 169$

$\therefore ACD = 90°$ #

B) Find height of a trapezium whose area 40 cm², and lengths of its two parallel bases are 7 cm, 9 cm

$h = \dfrac{40}{8} = 5$ cm
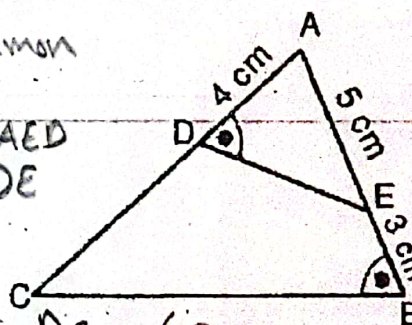

[Q5] A) In the opposite figure:

$AE = 5$ cm, $AD = 4$ cm, $BE = 3$ cm

And $m(\angle B) = m(\angle ADE)$

① Prove that: $\triangle ABC \simeq \triangle ADE$

② Find length of $\overline{DC}$

$\angle A$ Common

$\angle B = ADE$

$\therefore \angle C = AED$

$\therefore ABC \sim ADE$

$\dfrac{AE}{AC} = \dfrac{AD}{AB}$

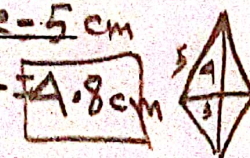$\dfrac{5}{AC} = \dfrac{4}{8}$

$AC = 10$ cm

$\therefore DC = 6$ cm

B) Find the area of rhombus whose diagonals 8 cm, 6 cm and find length of its height.

$A = \dfrac{1}{2} \times 6 \times 8 = 24$ cm²

base = 5 cm

$h = \dfrac{24}{5} = 4.8$ cm

End of the questions

GEOMETRY – MODEL NO ① 1

[Q1] Choose the correct answer:

(1) The area of square whose diagonal 8 cm is .... cm²

a) 128   b) 64   c) 32   d) 16

(2) The side lengths 4 cm , 5 cm , 3 cm are sides of .... triangle

a) Isosceles   b) Acute   c) Right   d) Obtuse

(3) If the projection of line segment on a straight line is a point, then the line segment .... on straight line

a) Parallel   b) Perpendicular   c) Coincide   d) bisects

(4) If the area of a rhombus is 40 cm², and length of one of its diagonals is 10 cm, then the other diagonal is .... cm

a) 80   b) 50   c) 4   d) 8

(5) The area of rectangle whose dimensions 4 cm , 9 cm .... the area of rhombus whose diagonals 12 cm , 5 cm

a) >   b) =   c) <   d) ≤

(6) The ratio between corresponding sides in two similar polygons is 1 : 3, if the perimeter of the smallest one 15 cm, then the perimeter of the greater polygon is .... cm

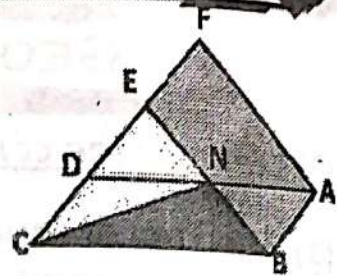a) 5   b) 45   c) 60   d) 75

[Q2] Complete each of the following:

6) XYZL is a parallelogram, area of △ XYZ = 18 cm², then the area of parallelogram XYZL equals .... cm²

7) In △ ABC, if (AB –AC) (AB + AC) < (BC)², then ∠ C is ....

8) Two parallel straight lines to third are ....

9) Number of axes of symmetry of an equilateral triangle is ....

10) If two triangles drawn on same base are equal in area, then its vertices on the straight line ....

ACADEMIC YEAR 2021 - 2022

[Q3] A) In the opposite figure:

ABCD, ABEF are two parallelograms

Prove that:
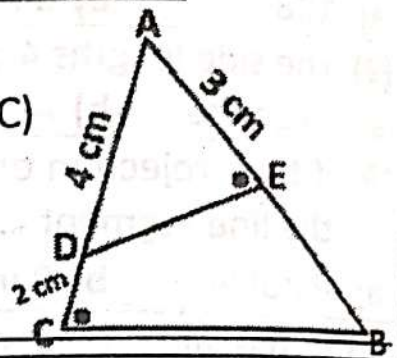
Area of $\triangle$ NBC = area Parallelogram of ABEF

B) In the opposite figure:

$\triangle$ ABC, D $\in \overline{AC}$. E $\in \overline{AB}$, m ($\angle$AED) = m ($\angle$C)

AE = 3 cm, AD = 4 cm, CD = 2 cm

① Prove that: $\triangle$ ABC $\sim \triangle$ AED
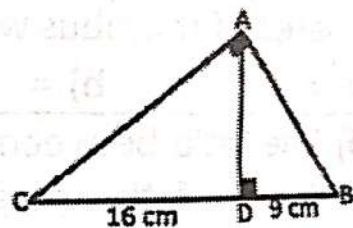
② Find the length of $\overline{EB}$

[Q4] A) A trapezium of area 180 cm², its height 12 cm, the ratio between length of its bases 3 : 2. Find length of its bases.

B) In the opposite figure:

$\triangle$ ABC if right triangle at A,

$\overline{AD} \perp \overline{BC}$, BD = 9 cm,

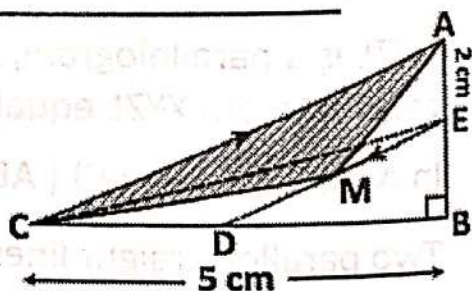CD = 16 cm, find length of $\overline{AD}$, $\overline{AB}$, $\overline{AC}$

[Q5] A) $\triangle$ XYZ, XY = 12 cm , YZ = 20 cm , XZ = 16 cm, determine the type of triangle according to its angles

B) In the opposite figure:

$\triangle$ ABC right at B, $\overline{ED}$ // $\overline{AC}$

AE = 2 cm , BC = 5 cm

Find area of $\triangle$ AMB

End of the questions

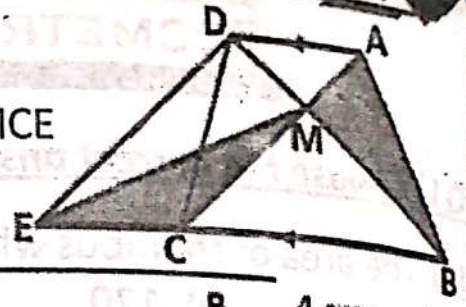# GEOMETRY – MODEL No ② 2

[Q1] *Choose the correct answer:*

(1) The area of rhombus whose diagonals 10 cm , 12 cm is ..... cm^2
a) 240   **b)** 120   **c)** 60   **d)** 30

(2) In $\triangle$ ABC, $(AC)^2 = (AB - BC) (AB + BC)$, then m ($\angle$B) ....90°
a) >   **b)** $\geq$ **c)** =   **d)** <

(3) Two perpendicular straight line on third are ....
a) Parallel   **b)** Perpendicular   **c)** Coincide   **d)** Intersecting

(4) The length of diagonal of square whose area 50 cm^2 is .... cm
a) 100   **b)** 20   **c)** 10   **d)** 5

(5) Length of projection of line segment on straight line parallel to it .... length of line segment.
a) >   **b)** =   **c)** <   **d)** $\leq$

(6) If ABCD $\simeq$ XYZL, m($\angle$A) = 80°, m($\angle$Z) = 50°, m($\angle$D) = 120°, then m($\angle$B) = ...°
a) 90   **b)** 110   **c)** 130   **d)** 250

[Q2] Complete each of the following:

6) If $\triangle$ ABC $\simeq$ $\triangle$ XYZ, and AB : XY = 2 : 5, AC = 8 cm, then XY = ... cm

7) Area of square of side length 8 cm = ... cm^2

8) In $\triangle$ ABC, D is midpoint of BC, Area of $\triangle$ ABD = 20 cm^2, then

area of $\triangle$ ABC = ... cm^2

9) If the ratio of enlargement for two similar triangles equal one, then the two triangle are ....

10) The isosceles triangle has .... Axes of symmetry

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[Q3] A) __In the opposite figure:__

$\overline{AD} \parallel \overline{BC}$, area of △ ABM = area of △ MCE

Prove that: $\overline{AC} \parallel \overline{DE}$

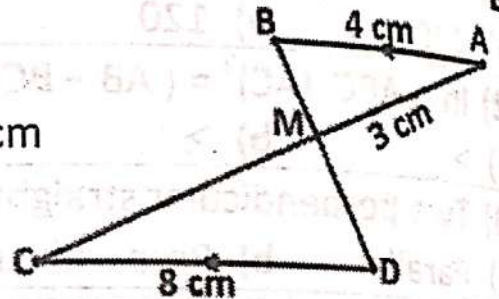**B)** __In the opposite figure:__

$\overline{AB} \parallel \overline{DC}$, $\overline{AC} \cap \overline{BD} = \{M\}$, AB = 4 cm

MA = 3 cm, DC = 8 cm

__Prove that:__ △ MAB ≃ △ MCD

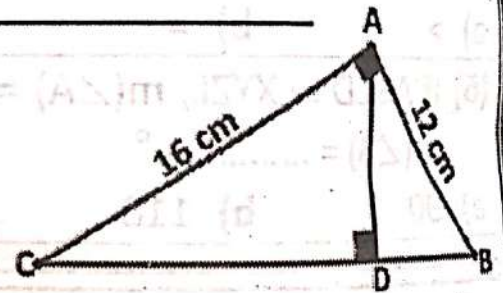**[Q4] A)** The area of trapezium is 80 cm^2, its height 8 cm, length of one of its parallel bases is 15 cm, find the length of other base.

B) __In the opposite figure:__

△ ABC right at ∠ BAC, $\overline{AD} \perp \overline{BC}$,

AB = 12 cm, AC = 16 cm

Find length of $\overline{BC}$, $\overline{AD}$

[Q5] A) In △ LMN, LM = 5 cm, MN = 7 cm, LN = 6 cm, determine the type of triangle according to its angles

B) __In the opposite figure:__

△ ABC is right at (∠ B), $\overline{DE} \parallel \overline{AC}$,

DB = 5 cm, EC = 8 cm

✍ Find the area of △ FDE

𝔈nd of the questions

GEOMETRY — MODEL No ③

[Q1] Choose the correct answer:

(1) The two triangle are equal in area and drawn in same base in one side of it, then their vertices on straight line .... base

a) Perpendicular   **b)** Bisects   c) Parallel   d) Transversal

(2) The area of triangle whose base 8 cm and its corresponding height 5 cm = ...cm²

a) 80   **b)** 40   c) 20   d) 10

(3) The angles of two similar polygons are .... measure

a) Equal   **b)** Different   c) Proportional   d) Alternative

(4) ....is a parallelogram with perpendicular diagonal

a) Square   **b)** Rectangle   c) Rhombus   d) Trapezium

(5) The two base angle of an isosceles triangle are ....

a) Complementary   **b)** Supplementary   c) Adjacent   d) Congruent

(6) The area of square whose diagonal 8 cm equal .... Cm²

a) ....   b) ....   c) ....   d) ....

[Q2] Complete each of the following:

6) The area of rhombus equals half product of ....

7) In $\triangle XYZ$, $(XY)^2 = (YZ)^2 - (XY)^2$, then m($\angle$......) = 90°

8) If $A \in$ straight line L, then projection of A on L is ....

9) $\triangle ABC \simeq \triangle XYZ$, and AB = 5 cm, XY = 3 cm
Then perimeter of $\triangle ABC$: perimeter of $\triangle XYZ$ = ... : ....

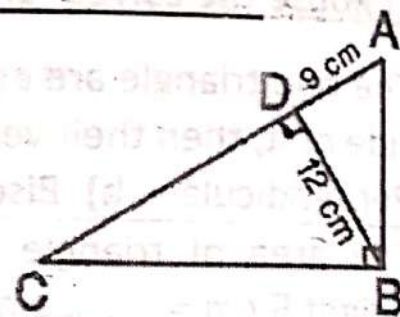10) The lengths of two parallel bases in trapezium are 10 cm, 6 cm, then the length of its middle base is .... c m

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[Q3] A) Find the height of rhombus whose area 96 cm² and lengths of its diagonals 12 cm, 16 cm

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B) In the opposite figure:

△ ABC right at B, $\overline{BD} \perp \overline{AC}$,
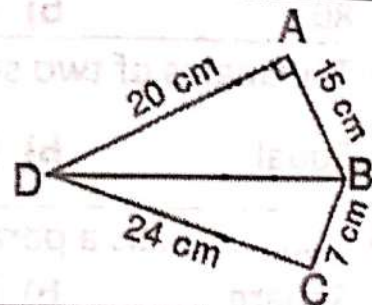If BD = 12 cm, AD = 9 cm
Find length of $\overline{DC}$

D 9 cm A
12 cm
C B

[Q4] A)   In the opposite figure:

m (∠ A) = 90°, AB = 15 cm , AD = 20 cm
BC = 7 cm, CD = 24 cm
Prove that: m (∠ C) = 90°

A
20 cm 15 cm
D B
24 cm 7 cm
C

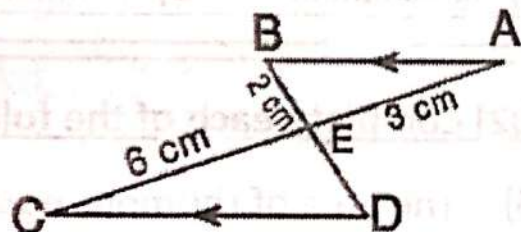**B)** Find the area of trapezium with two parallel bases 8 cm, 10 cm and its height 6 cm

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[Q5] A)   In the opposite figure:

$\overline{AB} \parallel \overline{CD}$, $\overline{AC} \cap \overline{BD} = \{ E \}$
AE = 3 cm, BE = 2 cm, CE = 6 cm
① Prove that: △ ABE ≃ △ CDE
② Find the length of $\overline{ED}$

B   A
2 cm 3 cm
6 cm E
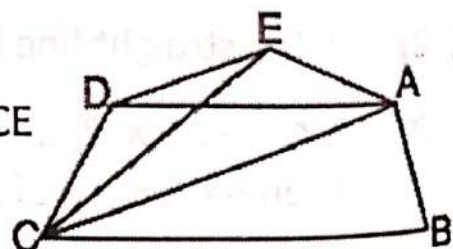C D

B) In the opposite figure:

Area of figure ABCD = area of figure ABCE

Prove that: $\overline{AC} \parallel \overline{ED}$

E
D A
C B

End of the questions

GEOMETRY – MODEL No ④

[Q1] *Choose the correct answer:*

(1) Area of square of diagonal 10 cm is .... Cm²

a) 100   b) 50   c) 40   d) 20

(2) In △ ABC, $(AC)^2 = (AB)^2 + (BC)^2 + 9$, then m $(\angle B)$ ....90°

a) >   b) =   c) <   d) ≤

(3) In △ ABC, $\overline{AD} \perp \overline{BC}$, then projection of $\overline{AD}$ on $\overleftrightarrow{BC}$ is ....

a) $\overline{BD}$ b) $\overline{CD}$ c) $\overline{BC}$ d) {D}

(4) The area of rhombus 42 cm² and one of its diagonals 12 cm, then the other diagonal is ....

a) 14   b) 7   c) 3.5   d) 2

(5) In a Parallelogram, length of two adjacent sides 7 cm , 9 cm and smaller height 4 cm, then its area .... cm²

a) 14   b) 18   c) 28   d) 36

(6) In △ ABC right at B, m $(\angle C) = 30°$, AB = 5 cm, then AC = ... cm

a) 5   b) $5\sqrt{3}$ c) 10   d) 15

[Q2] Complete each of the following:

6) If the drawing scale of two similar triangles 2 : 3 and measure of one of angles of smaller triangle is 80°, then the measure of corresponding angles in greater triangle equals ....°

7) The measure of two supplementary angles is ....°

8) If △ ABC ≃ △ XYZ and m$(\angle B) = 30°$, m$(\angle Z) = 50°$, then m $(\angle X) =$..

9) Length of projection of line segment on straight line parallel to it .... Length of line segment

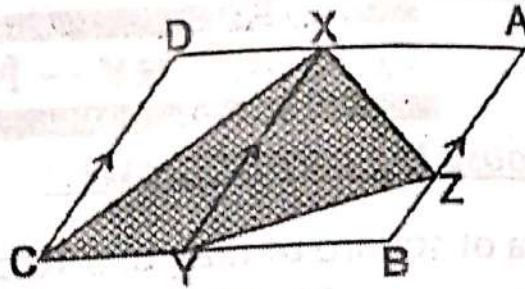**10)** If a straight line cut two parallel lines, then each two alternative angles are ....

27

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[Q3] A) In the opposite figure:

ABCD is a Parallelogram,

And $\overline{XY} // \overline{AB} // \overline{DC}$

Prove that:

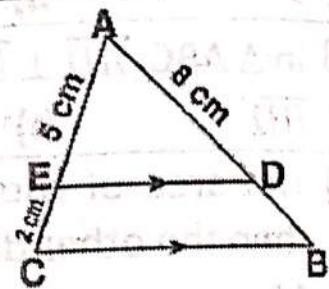Area of figure XZYC = $\frac{1}{2}$ area of Parallelogram ABCD

B) In the opposite figure:

$\overline{DE} // \overline{BC}$, AE = 5 cm , EC = 2 cm
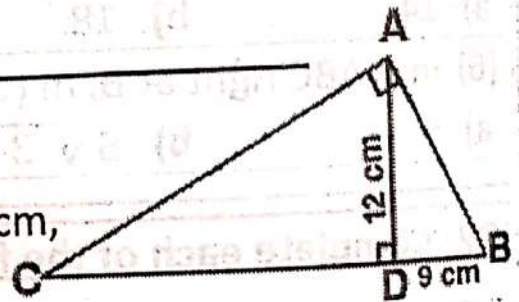
AD = 8 cm, prove that: $\triangle ABC \simeq ADE$

Then find the length of $\overline{BD}$

[Q4] A) Find the height of a trapezium whose middle base 12 cm and its surface area 60 cm², if one of its bases is twice the other, find length of each one?

B) In the opposite figure:

$\triangle ABC$ right at B, $\overline{AD} \perp \overline{BC}$, AD = 12 cm,

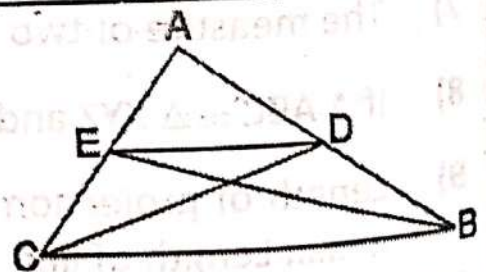BD = 9 cm, Find length of $\overline{DC}$, $\overline{AC}$

[Q5] A) Determine the type of triangle according to its angles if its sides lengths are AB = 10 cm, AC = 6 cm, BC = 8 cm

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B) In the opposite figure:

Area of $\triangle ABE$ = area of $\triangle ADC$

Prove that: $\overline{DE} // \overline{BC}$

End of the questions

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GEOMETRY — MODEL No 5

[Q1] Choose the correct answer:

(1) Area of triangle equal .... Area of Parallelogram with common base and between two parallel lines one of them carrying this base

a) Same   b) Half   c) Double   d) Quarter

(2) The height of triangle whose area 36 cm^2 and its base 9 cm is..

a) 2 cm   b) 4 cm   c) 8 cm   d) 12 cm

(3) Length of projection of line segment on straight line parallel to it .... Length of line segment

a) >   b) =   c) <   d) $\leq$

(4) Area of square whose diagonal 6 cm is .... cm^2

a) 12   b) 18   c) 36   d) 72

(5) Sum of interior angles of triangle is ....$^\circ$

a) 180   b) 360   c) 540   d) 720

(6) An isosceles triangle has ....axes of symmetry

a) Zero   b) One   c) Two   d) Three

[Q2] Complete each of the following:

6) The median of triangle divide it into two triangles ....

7) $\triangle ABC$, AB = 8 cm, BC = 6cm, AC = 10 cm, type of $\angle A$ is.............

8) The base of Parallelogram whose area 42 cm^2 and its height 6cm is ....

9) Two triangles are similar if their angles ....

10) If the ratio of similarity between two triangles equal one, then two triangles are ....

[Q3] A) In the opposite figure:

$\overline{AD} \parallel \overline{BC}, \overline{BE} = \overline{FC}$

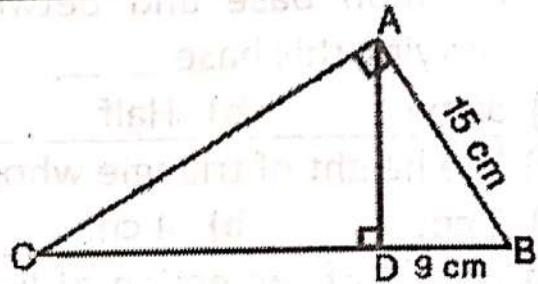Prove that:

Area of figure ABEM = area of figure DCFM

_____

B) In the opposite figure:

△ ABC is right at A, $\overline{AD} \perp \overline{BC}$

If AB = 15 cm, BD = 9 cm

Find length of BC
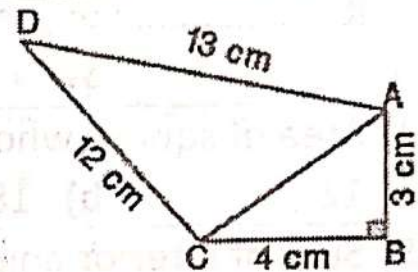
_____

[Q4] A) In the opposite figure:

m (∠B) = 90°, AB = 3 cm, BC = 4 cm

DA = 13 cm, DC = 12 cm

Prove that: m (∠ ACD) = 90°

_____

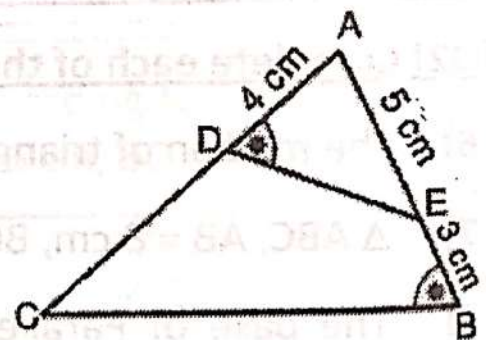**B)** Find height of a trapezium whose area 40 cm², and lengths of its two parallel bases are 7 cm , 9 cm

_____

[Q5] A) In the opposite figure:

AE = 5 cm, AD = 4 cm, BE = 3 cm

And m (∠B) = m (∠ADE)

① Prove that: △ ABC ≃ △ ADE

② Find length of $\overline{DC}$

_____

B) Find the area of rhombus whose diagonals 8 cm, 6 cm and find length of its height.

◇◇◇

End of the questions

GEOMETRY – MODEL No 6

[Q1] *Choose the correct answer:*

(1) If area of rhombus 40 cm², one of its diagonals 10 cm, then the length of other diagonal .... cm

a) 5   **b)** 6   c) 8   **d)** 10

(2) If the area of square 50 cm², then length of its diagonal ...... cm

a) 5   **b)** 10   c) 25   **d)** 100

(3) In $\triangle ABC$, if $(AB)^2 - (BC)^2 = (AC)^2$, then m ($\angle B$) ....

a) Acute   **b)** Right   c) Obtuse   **d)** Straight

(4) If area of triangle 30 cm², its height 5 cm, then its base .... Cm

a) 6   **b)** 12   c) 18   **d)** 5

(5) Projection of point (5 , 3) on X – axis is ....

a) (5 , 3)   **b)** (– 5 , 3)   c) (5 , 0)   **d)** (0 , 3)

(6) If the drawing scale of two similar triangles 1 : 2 and measure of one of angles of smaller triangle is 50°, then the measure of corresponding angles in greater triangle equals ....°

a) 25   **b)** 50   c) 100   **d)** 150

[Q2] Complete each of the following:

6) Area of Parallelogram 30 cm², its base 6 cm, its height ....

7) In $\triangle ABC$ right at A, $\overline{AD} \perp \overline{BC}$, then AB × ..... = BC × ....

8) Area of Parallelogram equal .... Area of triangle with common base and between two parallel lines one of them carrying this base

9) Two triangles area similar if their corresponding sides are ....

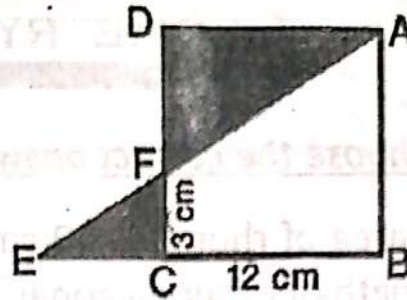**10)** The median of triangle divide it into two triangles ....

[Q3] **A)** **In the opposite figure:**

ABCD is square of side 12 cm,

CF = 3 cm, $\overline{AE} \cap \overline{CD} = \{F\}$

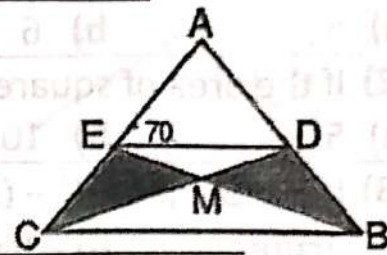① Prove that: $\triangle ADF \simeq ECF$

② Find length of $\overline{EC}$

B) **In the opposite figure:**

If area of $\triangle DBM$ = area of $\triangle CME$

And m ($\angle AED$) = 70°

Find m ($\angle ACB$)

[Q4] **A)** The ratio between two parallel bases in a trapezium 2 : 3, and length of its middle base 30 cm, find:
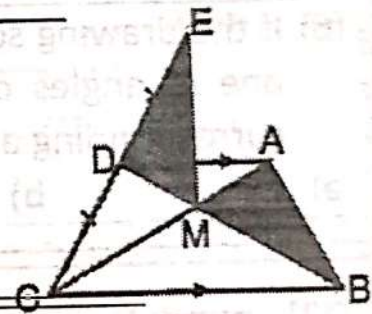
① Length of its bases

② Area of trapezium if its height 24 cm

B) **In the opposite figure:**

$\overline{AD} \parallel \overline{BC}$, D midpoint of $\overline{BC}$

Prove that:

Area of $\triangle ABM$ = area of $\triangle DME$

[Q5] **A)** Determine the type of triangle according to its angles if its sides lengths are AB = 8 cm, AC = 6 cm, BC = 7 cm
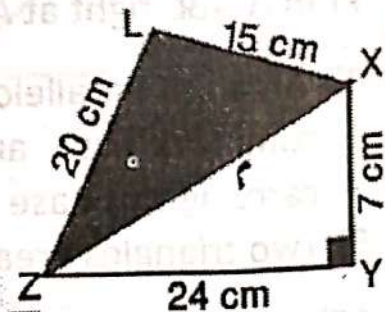
B) **In the opposite figure:**

M ($\angle XYZ$) = 90°, $\overline{LM} \perp \overline{XZ}$, XL = 15 cm

ZL = 20 cm, XY = 7 cm, YZ = 24 cm

① Prove that: m ($\angle XLZ$) = 90°

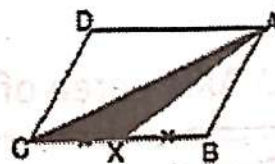② Find length of $\overline{LM}$, $\overline{XM}$

End of the questions

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GEOMETRY – MODEL No 7

[Q1] *Choose the correct answer:*

(1) The diagonal of square whose area 50 cm² is .... Cm

a) 10   b) 20   c) 30   d) 40

(2) If the ratio between two similar triangles 1 : 3 and length of sides of greater triangle is 12 cm, then the length of corresponding side in smaller triangle equals .... cm

a) 4   b) 6   c) 12   d) 24

(3) In $\triangle$ ABC, $(AB)^2 - (BC)^2 > (AC)^2$, then $\angle$ B ....

a) Acute   b) Right   c) Obtuse   d) Straight

(4) Length of two parallel bases in trapezium 10 cm , 6 cm, its height 5 cm, then its area = ... cm²

a) 10   b) 30   c) 40   d) 80

(5) If area of rhombus 48 cm², length of one of its diagonals 12 cm, then length of other diagonal is .... Cm

a) 4   b) 8   c) 10   d) 16

(6) In the opposite figure:

BX = XC

Area of $\triangle$ AXC = ... area of ABCD

a) $\frac{1}{2}$ b) $\frac{1}{4}$ c) $\frac{1}{8}$ d) 2

[Q2] Complete each of the following:
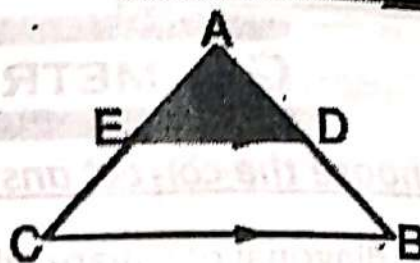
6) Length of projection of line segment on straight line parallel to it .... Length of line segment

7) Two similar polygons two third are ....

8) Two triangles on same base and its vertices on straight line parallel to base are ....

9) Projection of point (5 , 3) on y axis is point ....

10) Two diagonals of an isosceles trapezium are ....

33

[Q3] A) In the opposite figure:

$\overline{DE} \parallel \overline{BC}$, DE = 6 cm, AD : AB = 1 : 3

① Prove that: $\triangle$ ADE $\simeq$ $\triangle$ ABC
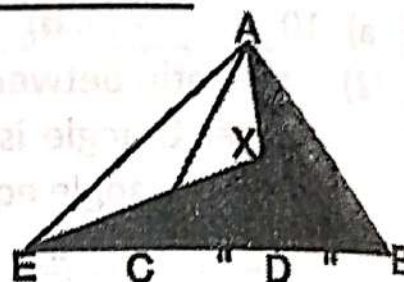
② Find length of $\overline{BC}$

B) In the opposite figure:

Area of $\triangle$ ADB = area of $\triangle$ XDE
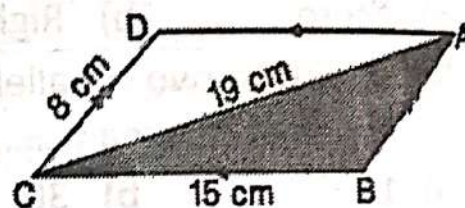
And DB = DC,

Prove that: XC // AE

[Q4] A) In the opposite figure:

ABCD is Parallelogram,

BC = 15 cm, DC = 8 cm, AC = 19 cm

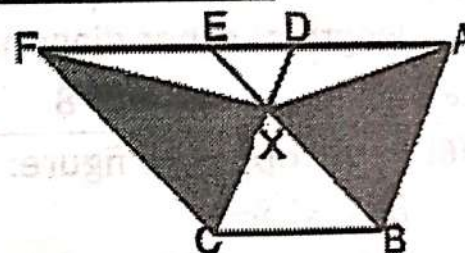Prove that: $\angle$ ABC is obtuse angle

B) In the opposite figure:

ABCD is Parallelogram

Prove that:

Area of $\triangle$ AXB = area of $\triangle$ XCF

[Q5] A) Find the area of rhombus whose perimeter 60 cm and measure of one of its angles is 60°
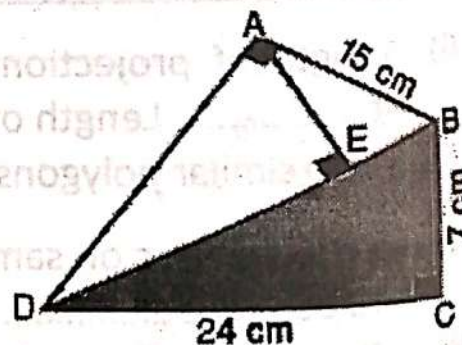
B) In the opposite figure:

ABCD is quadrilateral, $\overline{AE} \perp \overline{BD}$

m ($\angle$ BCD) = m ($\angle$BAD) = 90°, **Find:**

① Length of $\overline{AD}$, $\overline{BD}$

② Length of projection of $\overline{AB}$ on $\overline{BD}$

③ Length of projection of $\overline{AD}$ on $\overline{AE}$

End of the questions

GEOMETRY – MODEL No 8

[Q1] Choose the correct answer:

(1) Perimeter of rhombus of diagonals 12 cm , 16 cm is ....cm
a) 10   b) 40   c) 96   d) 192

(2) Length of projection of line segment on straight line parallel to it .... length of original line segment.
a) >   b) =   c) <   d) ≤

(3) Area of rectangle whose sides 8 cm , 4 cm = ...cm^2
a) 16   b) 24   c) 32   d) 64

(4) Sum of interior angles of quadrilateral = ...$^{\circ}$
a) 180   b) 360   c) 540   d) 720

(5) Measure of exterior angle of an equilateral triangle = ...$^{\circ}$
a) 60   b) 120   c) 180   d) 360

(6) Area of square whose perimeter 12 cm is ....cm^2
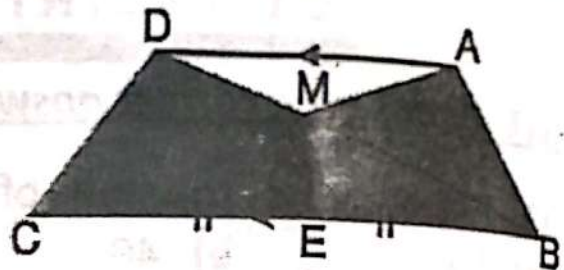a) 72   b) 144   c) 3   d) 9

[Q2] Complete each of the following:

6) The triangles with equal bases and lay on same straight line and have common vertex are ....

7) In △ ABC, AB = 8 cm, BC = 5 cm, AC = 4 cm, then △ ABC is ....

8) If the length of two adjacent sides in Parallelogram are 5 cm , 9 cm, and its smaller height is 7 cm, then its area ....cm^2

9) Two triangles are similar if their corresponding sides are.........

10) The area of a square formed on one of the right sides of a right–angled triangle is equal to the area of the rectangle whose dimensions project of this side on hypotenuse and the length of ....

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[Q3] A)   **In the opposite figure:**

$\overline{AD} \parallel \overline{BC}$, E is midpoint of $\overline{BC}$
Prove that:
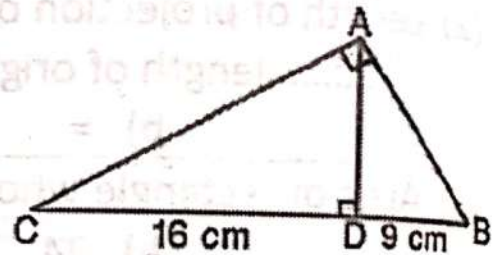Area of ABEM = area of DCEM

B)   **In the opposite figure:**

$\triangle$ ABC right at A, $\overline{AD} \perp \overline{BC}$
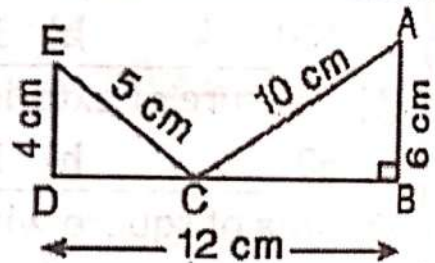BD = 9 cm , CD = 16 cm
Find length of $\overline{AB}$

[Q4] A)   **In the opposite figure:**

m ($\angle$ B) = 90°, AB = 6 cm, AC = 10 cm
ED = 4 cm, EC = 5 cm, BC = 12 cm
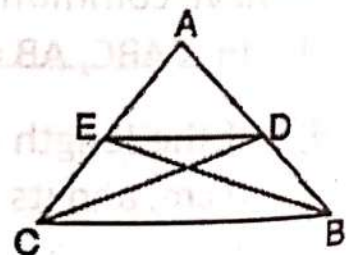Prove that: m ($\angle$ D) = 90°

B) Two similar triangles, perimeter of the first 54 cm, lengths of sides

of other triangle 5 , 6 , 7 cm, find the sides lengths of first triangle

[Q5] A)   **In the opposite figure:**
Area of $\triangle$ ABE = area of $\triangle$ ACD
Prove that:
$\overline{DE} \parallel \overline{BC}$

B) Find the middle base of a trapezium whose area 110 cm^2 and its
height 10 cm.

End of the questions

GEOMETRY – MODEL No ⑨

[Q1] *Choose the correct answer:*

(1) Area of square whose side 12 cm is ....cm^2

a) 36   **b)** 48   **c)** 72   **d)** 144

(2) In $\triangle ABC$, if $\overline{AD} \perp \overline{BC}$, then projection of point A on $\overleftrightarrow{BC}$ is ....

a) { D }   **b)** $\overline{BD}$ **c)** $\overline{CD}$ **d)** $\overline{BC}$

(3) Measure of exterior angle o equilateral triangle is ....°

a) 30   **b)** 60   **c)** 120   **d)** 360

(4) The triangle of sides 5 cm , 8 cm , 12 cm is ....triangle

a) Right   **b)** Acute   **c)** Obtuse   **d)** Isosceles

(5) In $\triangle ABC$: $(AB)^2 = (BC)^2 + (AC)^2 + 5$, then $m (\angle C)$ ......90°

a) >   **b)** =   **c)** <   **d)** ≤

(6) The area of rhombus 100 cm^2, its diagonal 10 cm, the other diagonal is .... cm

a) 2   **b)** 5   **c)** 10   **d)** 20

[Q2] **Complete each of the following:**

6) If the ratio between two similar triangles 2 : 3 and measure of one angle smaller triangle is 20°, then the measure of corresponding angle in greater triangle equals ....°

7) Area of Parallelogram equals .... area of triangle with common base and lies between two parallel lines
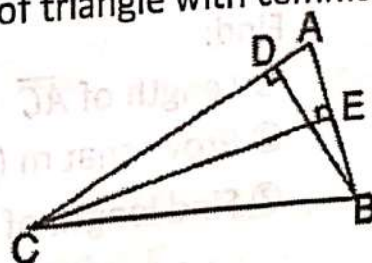
8) In the opposite figure:
AB = 5 cm , AC = 10 cm
EC = 8 cm, then BD = ... cm

9) Sum of measures of two complementary angles is ....

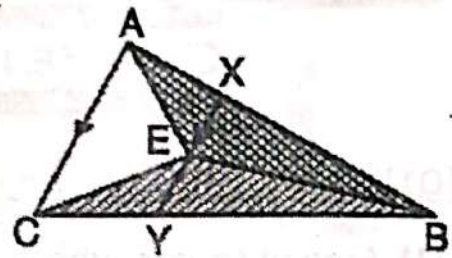**10)** Two triangles are similar if their corresponding sides are ....

[Q3]

A) In the opposite figure:

$\overline{AC} \parallel \overline{XY}$, F midpoint of $\overline{XY}$
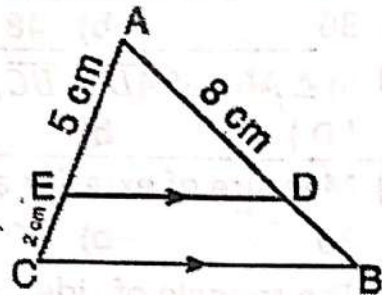Prove that:
Area of $\triangle$ ABF = area of $\triangle$ CBF

B) In the opposite figure:

DE // BC , AE = 5 cm
EC = 2 cm, AD = 8 cm
① Prove that: $\triangle$ ABC $\simeq$ ADE
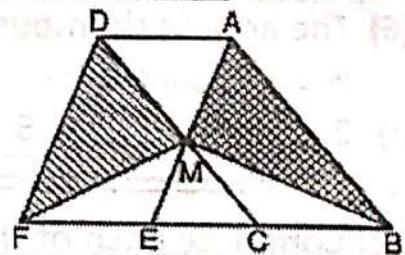② Find length of $\overline{BD}$

[Q4]

A) Area of trapezium 180 cm², its height 12 cm, ratio between its two parallel bases 3 : 2, find length of each one

---

B) In the opposite figure:

ABCD, AEFD are two Parallelograms
Prove that:
Area of $\triangle$ ABM = area of $\triangle$ DFM

[Q5] In the opposite figure:

ABCD is quadrilateral, m ($\angle$ B) = 90°
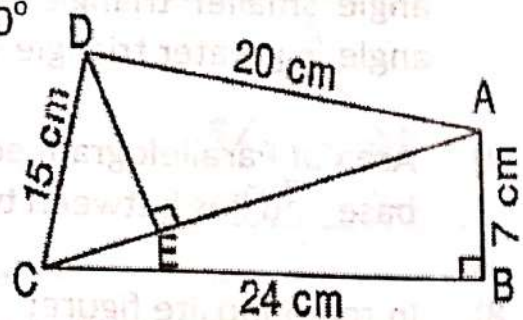$\overline{DE} \perp \overline{AC}$, AB = 7 cm, BC = 24 cm
CD = 15 cm, DA = 20 cm
Find:
① Length of $\overline{AC}$
② Prove that m ($\angle$ ADC) = 90°
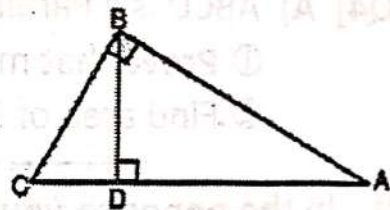③ Find length of projection of $\overline{DC}$ on $\overrightarrow{AC}$

End of the questions

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GEOMETRY – MODEL No ⑩

[Q1] Complete each of the following:

6) The area of rhombus 48 cm², its diagonal 12 cm, the other diagonal is .... cm

7) In $\triangle$ ABC, AB = 5 cm, BC = 7 cm, CA = 11 cm, then m ($\angle$B) = ...

8) Two similar triangles, sides of first one 4 , 6 , 8 cm, perimeter of the other 72 cm, then the sides of the other ......, ..., ... cm
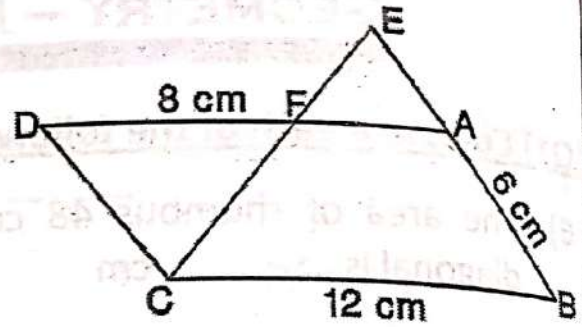
9) The median of triangle divide it into two triangles ....

10) In the opposite figure:
$\triangle$ ABC, m ($\angle$ABC) =90°, $\overline{BD} \perp \overline{AC}$
① Then projection of $\overline{AB}$ on $\overline{AC}$ is ....
② $(BC)^2 = $ .... × ....

[Q2] Choose the correct answer:

(1) Area of triangle 24 cm², its height 8 cm, then its base ....cm

a) 2   b) 3   c) 6   d) 16

(2) ABCD is a Parallelogram, E $\in$ D, area of $\triangle$ AEB = 20 cm², then area of Parallelogram ABCD = ...cm²

a) 10   b) 20   c) 30   d) 40

(3) A trapezium length of its parallel bases 5 cm , 7 cm, its area 42 cm, then its height = ... cm

a) 5   b) 6   c) 7   d) 12

(4) In $\triangle$ ABC, AB = 7 cm , BC = 5 cm , AC = 4 cm, then $\angle$ C ....

a) Acute   b) Obtuse   c) Right   d) Straight

(5) If length of rectangle 12 cm , its diagonal 13 cm, the its area .....

a) 144 cm²   b) 169 cm²   c) 156 cm²   d) 60 cm²
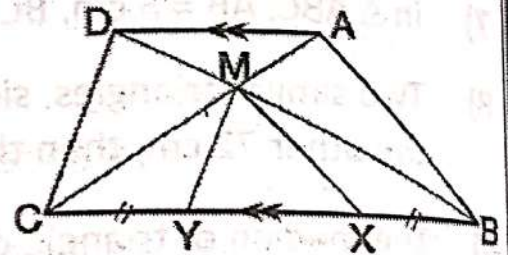
[Q3] A) **In the opposite figure:**
ABCD is Parallelogram, $E \in \overrightarrow{BA}$
$\overline{CE} \cap \overline{AD} = \{ F \}$, BC = 12 cm,
AB = 6 cm, FD = 8 cm, FC = 7 cm
① **Prove that:** $\triangle AEF \simeq \triangle DCF$
② Find length of $\overline{EB}$, $\overline{EF}$

B) **In the opposite figure:**
$\overline{AD} \parallel \overline{BC}, \overline{AC} \cap \overline{BD} = \{ M \}$,
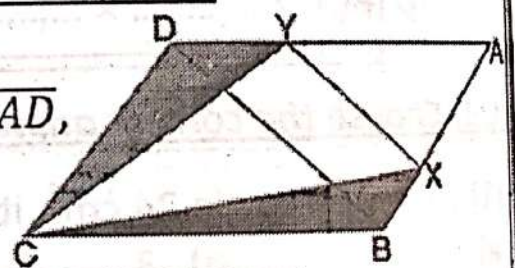$X, Y \in \overline{BC}$, BX = CY, prove that:
Area of ABXM = area of DCYM

[Q4] A) ABCD is a Parallelogram, AB = 8 cm, AC = 20 cm, BD = 12 cm,
① **Prove that** $m (\angle ABD) = 90°$
② Find area of Parallelogram ABCD

B) **In the opposite figure:**
ABCD is Parallelogram, $X \in \overline{AB}, Y \in \overline{AD}$,
Area of $\triangle BCX$ = area of $\triangle CYD$
Prove that: $\overline{XY} \parallel \overline{BD}$

[Q5] **In the opposite figure:**
ABCD is quadrilateral,
$m (\angle BCD) = m(\angle BAD) = 90°$
$\overline{AE} \perp \overline{BD}$, BC = 7 cm, CD = 24 cm
AB = 15 cm, Find:
① Length of $\overline{BD}$, $\overline{AD}$
② Find length of projection of $\overline{AB}$ on $\overleftrightarrow{BD}$
③ Find length of projection of $\overline{AD}$ on $\overleftrightarrow{AE}$

End of the questions

Prep 2 T₂
2020-2021   ①, (Choose)

① $A = \frac{1}{2}(d)^2 = \frac{1}{2}(8)^2 = 32 \ cm^2$

② $5^2 = 25 \qquad 5(4)^2+(3)^2 = 25$

$\therefore (5)^2 = (4)^2+(3)^2$

✱ Right Triangle

③ Perpendicular   ←⊥→

④ A) $= \frac{1}{2}d_1 d_2$
Rhombus

$40 = \frac{1}{2}(10)(d_2)$

$d_2 = 8 \ cm$

⑤ A) $_{Rectangle} = 4 \times 9 = 36 \ cm^2$

A) $_{Rhombus} = \frac{1}{2}(12)\times 5 = 30 \ cm^2$

$A_{Rectangle} \gt A_{Rhombus}$ [a]

⑥ $\dfrac{small \ length}{large} \sim = \dfrac{small \ Perimeter}{large} \sim$

$\dfrac{1}{3} = \dfrac{15}{X} \Rightarrow X = 3 \times 15$
$= 45 \ cm$

②₂ Complete

① $A(\triangle xyz) = 18 \ cm^2$

$A(\square xyz\ell) = 18 \times 2$
$= 36 \ cm^2$
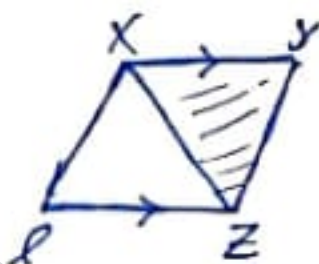
② $(AB)^2 - (AC)^2 \lt (BC)^2$

$(AB)^2 \lt (BC)^2+(AC)^2$

then $\angle c$ is   Acute Angle

③ Parallel

④ 3

⑤ Parallel to this Base

---

⑤(3) Ⓐ

① $\triangle NBC \ \& \ \square ABCD$

$\overline{BC}$ (Common Base) & $C\overline{B} // D\overline{A}$

& $N \in DA$ $\therefore A(\triangle NBC) = \frac{1}{2}A(\square ABCD)$ ①

∵ in $\square(ABCD)$, $\square ABEF$

$(\overline{BA})$ Common Base

C, D, E, F on same straight line

$\therefore A(\square ABCD) = A(\square ABEF)$ ②

from ① & ② $\therefore A(\triangle NBC) = A(\square ABEF)$

③ ∵ $\triangle\triangle (ABC), (AED)$

$\angle A$ (Common angle
m(AED) = m(ACB)
m(ADE) = m(ABC)

$\therefore \triangle ABC \sim \triangle ADE$

$\therefore \dfrac{AB}{AD} = \dfrac{BC}{DE} = \dfrac{AC}{AE} \Rightarrow \dfrac{AB}{4} = \dfrac{6}{3}$

$AB = \dfrac{24}{3} = 8 \ cm \qquad S\overline{EB} = 8-3$
$= 5 \ cm$

④ ⓐ Assume

First Base $= 3X$ & Second Base $= 2X$

∵ $A = \frac{1}{2}(B_1+B_2)\ast H \Rightarrow 180 = \frac{1}{2}(5X)\ast 12$

$\therefore 180 = 30X \Rightarrow X = 6$

$\therefore B_1 = 6\times 3 = 18 \ cm, \ B_2 = 2\times 6 = 12 \ cm$

ⓑ ∵ $\angle A = 90°$ & $\overline{AD} \perp \overline{BC}$

$\therefore (AD)^2 = DB \times DC \Rightarrow AD = \sqrt{9 \times 16} = 12 \ cm$

$AB = \sqrt{DB \times CB} = \sqrt{9 \times 25} = 15 \ cm$

$AC = \sqrt{CD \times CB} = \sqrt{16 \times 25} = 20 \ cm$

⑤ ⓐ $(YZ)^2 = (20)^2 = 400$

$(XY)^2+(XZ)^2 = (12)^2+(16)^2 = 400$

$\therefore (YZ)^2 = (XY)^2+(XZ)^2$

$\therefore \triangle XYZ$ is right Triangle in $\angle X$

ⓑ ∵ $\overline{ED} // \overline{AC}$ & $\overline{AC}$ (Common Base)

$\therefore A(\triangle ACM) = A(\triangle ACE)$

∵ $A(ACE) = \frac{1}{2}\ast 2\ast 5 = 5 \ cm^2$

$\therefore A(ACM) = 5 \ cm^2$

$\smallint$ eng. AbdelAZIZ Akl

①

model ② Geometry

① (1)

A) $A_{rhombus} = \frac{1}{2} d_1 d_2 = \frac{1}{2}(10)(12) = 60 \text{ cm}^2$

② $(AC)^2 = (AB)^2 - (BC)^2$

$\therefore (AB)^2 = (AK)^2 + (BC)^2$

$\therefore m(\angle B) > 90°$

③ Parallel

④ $D = \sqrt{2(Area\ of\ \square)} = \sqrt{2 \times 50}$

$= 10 \text{ cm}$

⑤ =

⑥ $\left. \begin{array}{l} m(\hat{A}) = m(\hat{X}) = 80° \\ m(\hat{B}) = m(\hat{y}) = \cdots \\ m(\hat{Z}) = m(\hat{z}) = 50° \\ m(\hat{D}) = m(\angle L) = 120 \end{array} \right\} \Rightarrow \begin{array}{l} m(\hat{B}) = m(\hat{y}) \\ = 360 - 80 \\ -50 - 120 \\ = 110° \end{array}$

② [2]

① $\frac{AB}{XY} = \frac{BC}{YZ} = \frac{AC}{XZ} \Rightarrow \frac{2}{5} = \frac{8}{XZ}$

$XZ = \frac{5 \times 8}{2} = 20 \text{ cm}$

② $A_{\square} = (8)^2 = 64 \text{ cm}^2$

③ $A\triangle ABc = 2(Area\ of\ ABD)$

$= 2(20)$

$= 40 \text{ cm}^2$

④ Congurent

⑤ 1

② (3) A)

$\overline{DA} \parallel \overline{BC} \ \& \ \overline{AD}$ Common Base

$\therefore$ Area of $\triangle ADB = A$ of $\triangle ADc$

By deleting A of ABD

from each other

$\therefore A$ of $\triangle AMB = A$ of $\triangle DMC$ ①

$\because A$ of $\triangle ABM = A$ of $\triangle MCE$ ②

$\therefore A$ of $\triangle CMD = A$ of $\triangle CME$

$\ell \ \overline{MC}$ Common Base

$\therefore \overline{MC} \parallel \overline{DE}$

$\overline{AB} \parallel \overline{DC} \ \& \ \overline{AC}, \overline{BD}$ transversal

$\therefore m(\hat{A}) = m(\hat{C})$ alternate

$m(\hat{C}) = m(\hat{D})$ ~

and $m(B\hat{M}A) = m(C\hat{M}D)$ V.O.A

$\therefore \triangle MAB \sim \triangle MCD$

$\frac{MA}{MC} = \frac{AB}{CD} = \frac{MB}{MO} \Rightarrow \frac{3}{MC} = \frac{4}{8}$

$\therefore MC = \frac{3 \times 8}{4} = 6 \text{ cm}$

② (4)

A) $A_{Trapezium} = \frac{1}{2}(B_1 + B_2) \times H$

$80 = \frac{1}{2}(15 + B_2) \times 8$

$\therefore \frac{80}{4} = 15 + B_2 \Rightarrow B_2 = 5 \text{ cm}$

B) $\because m(\hat{A}) = 90° \ \& \ \overline{AD} \perp \overline{BC}$

$\therefore BC = \sqrt{(12)^2 + (16)^2} = 20 \text{ cm}$

$AD = \frac{AB \times AC}{CB} = \frac{12 \times 16}{20} = 9.6 \text{ cm}$

Q5

[a] $(MN)^2 = (7)^2 = 49$

$(LM)^2 + (LN)^2 = (5)^2 + (6)^2 = 61$

$\therefore (MN)^2 < (LM)^2 + (LN)^2$

$\therefore \triangle LMN$ Acute-Angle-triangle

B) $\because \overline{DE} \parallel \overline{AC} \ \& \ (\overline{ED})$

Common Base

$\therefore A$ of $\triangle (FDE) = A$ of $\triangle EDC$

$\therefore A$ of $\triangle EDC = \frac{1}{2} \times 8 \times 5 = 20 \text{ cm}^2$

$\therefore A$ of $\triangle FDE = 20 \text{ cm}^2$

eng. AbdelAziz

model ③ Geometry
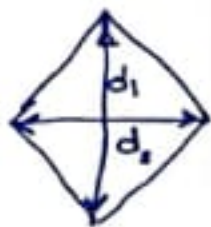
① ① Parallel

② A of $\Delta = \frac{1}{2}(8)(5) = 20\ cm^2$

③ equal

④ Rhombus

⑤ Congruent

⑥ $A_D = \frac{1}{2}d^2 = \frac{1}{2}(8)^2 = 32\ cm^2$

② ① it's Diagonal

$A\big)_{Rhombus} = \frac{1}{2}d_1 d_2$

② $(yz)^2 = (xy) + (xz)^2 \Rightarrow m(\hat{x}) = 9°$

③ $FA\}$ or Point A

④ $\dfrac{P\ \Delta ABC}{P\ \Delta xyz} = \dfrac{AB}{xy} = \dfrac{5}{3}$

⑤ middle Base $= \dfrac{B_1 + B_2}{2} = \dfrac{10+6}{2} = 8\ cm$

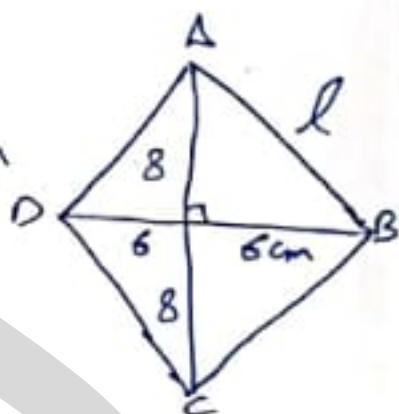**③** A) $A\big)_{Rhombus} = \frac{1}{2}d_1 d_2 = L \times H$

$\therefore 96 = \ell * H$

$\ell = \sqrt{(8)^2 + (6)^2} = 10cm$

$\therefore 96 = 10 \times H$

$H = 9.6\ cm$

B) $\because m(\hat{B}) = 90 \ \ S\ \overline{BA} \perp \overline{Ac}$

$\therefore (BD)^2 = DA \times Dc$

$(12)^2 = 9 \times DC$

$Dc = \dfrac{144}{9} = 16\ cm$

④ A) $\because \Delta ABD$

$BD = \sqrt{(20)^2 + (15)^2} = 25\ cm$

$\because \Delta DBC$

$(BD)^2 = (25)^2 = 625$

$(Dc)^2 + (cB)^2 = (24)^2 + (7)^2 = 625$

$\therefore (BD)^2 = (Dc)^2 + (cB)^2$

$\therefore m(\hat{c}) = 90°$ #

B) $A\big) = \frac{1}{2}(B_1 + B_2) * H$

Trapezium $= \frac{1}{2}(8+10) \times 6 = 54\ cm^2$

⑤ A) $\because \overline{BA} \parallel \overline{CD}$

$\overline{AC}\ S\ \overline{BD}$ transversal

$\therefore m(\hat{A}) = m(\hat{c})$ ⎤ alternate

$m(\hat{B}) = m(\hat{D})$ ⎦

$m(B\hat{E}A) = m(C\hat{E}D)$ V.o.A, (vertically opposite angle)

$\therefore \Delta ABE \sim \Delta CDE$

$\dfrac{AB}{CD} = \dfrac{BE}{DE} = \dfrac{AE}{CE} \Rightarrow \dfrac{2}{DE} = \dfrac{3}{6}$

$\overline{DE} = \dfrac{12}{3} = 4\ cm$

B) $\because A$ of $ABCD = A$ of $ABCE$

with Deleting A of ΔAcB

with Both Side

$\therefore A$ of $\Delta CAD = A$ of ΔCAE

$\&\ \overline{CA}$ (common Base)

$\&$ two Traingles on Same Side

from it's Base

$\therefore \overline{AC} \parallel \overline{ED}$ #

eng. AbdelAzIz

Q1

1) $A_\square = \frac{1}{2}d^2 = \frac{1}{2}(10)^2 = 50$ cm²

2) $> 90°$

3) FD3

4) A) $_{Rhombus} = \frac{1}{2}d_1 d_2 \Rightarrow 42 = \frac{1}{2}(12)d_2$

   $d_2 = 7$ cm

5) A) $_\square$ = smaller Height × Big length

   $= 4 \times 9 = 36$ cm²

6) $\overline{AC} = 2\overline{AB} = 2(5) = 10$ cm
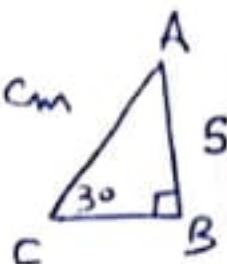
Q2

1) 80° (Angles equal in measure) lengths Proportion in Length

2)

3) 180°

4) $m(\hat{X}) = 180 - (30+50)$

   $= 100°$

5) equal (=)

6) equal in measure

   OR « Congruent »

Q3

A) $\overline{XY}$ Common Base S $\overline{XY} \parallel \overline{AB}$

$\therefore$ A of $\triangle XYZ = \frac{1}{2}$ A $\square XYBA$ ①

$\because \overline{XY}$ Common Base , $\overline{XY} \parallel \overline{CD}$

$\therefore$ A of XYC $= \frac{1}{2}$ A $\square$ XYCD ②

with adding (sum) ① & ②

$\therefore$ A of XZYC $= \frac{1}{2}$ A of ABCD

$\overline{BC} \parallel \overline{ED}$ S($\overline{AC}$ & $\overline{AB}$) are

Transversal

$\therefore m(A\hat{D}E) = m(\hat{B})$ with Corresponding axiom

$m(A\hat{E}D) = m(\hat{C})$

$m(\hat{A})$ Common Angle

$\therefore \triangle ABC \sim \triangle ADE$

$\frac{AB}{AD} = \frac{AC}{AE} \Rightarrow \frac{AB}{8} = \frac{7}{5}$

$AB = \frac{56}{5} = 11.2$ cm

Q4 (w) A) $A_\square = \frac{1}{2}(B_1+B_2) \times H$

$= $ middle Base × H

$60 = \frac{1}{2}(12) \times H \Rightarrow H = \frac{60}{12} = 5$ cm

$B_1 = 2B_2$

$\Rightarrow 60 = (\frac{1}{2})(B_1+B_2) \times H$

$60 = \frac{1}{2}(2B_2+B_2) \times 5$

$\therefore 24 = 3B_2 \Rightarrow B_2 = 8$ cm

$B_1 = 16$ cm

Q5 A)

$(AB)^2 = (10)^2 = 100$

$(AC)^2+(BC)^2 = (6)^2+(8)^2 = 100$

$\therefore \triangle ABC$ is Right Angle triangle

In $(\hat{C})$

$$(AB)^2 = (AC)^2+(BC)^2$$

B) $\because$ A of $\triangle ABE$ = A of $\triangle ADC$

with deleting A of $\triangle ADE$

$\therefore$ A of $\triangle EOB$ = A of $\triangle EDC$

S $\overline{ED}$ (common Base) &

two Triangles in same side

from id's Base

$\therefore \overline{DE} \parallel \overline{BC}$

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model (5) Geometry

Left column:

1.
   ① Half
   ② $H = \dfrac{2(A)}{B} = \dfrac{2(36)}{9} = 8$ cm
   ③ =
   ④ $A = \dfrac{1}{2} d^2 = \dfrac{36}{2} = 18$ cm²
   ⑤ $180°$
   ⑥ one

2.
   ① equal in Area
   ② $(AC)^2 = 100$ & $(AB)^2 + (BC)^2 = 100$
   $\therefore m(\hat{B}) = 90° \Rightarrow m(\hat{A})$ is Acute
   ③ $B = \dfrac{A}{H} = \dfrac{42}{6} = 7$ cm
   ④ equal in measure (OR) Congruent
   ⑤ Congruent

3.
   $\because \overrightarrow{AD} \parallel \overrightarrow{BC}$ & $(\overline{AD})$ Common Base
   $\therefore A$ of $\triangle ADB = A$ of $\triangle ADC$
   By Deleting A) of $\triangle ADM$ from each Side
   $\therefore A$ of $\triangle AMB = A$ of $\triangle DMC$ ①
   $\because \overline{EB} = \overline{CF}$ & (M Common Angle)
   $\therefore A$ of $\triangle MBE = A$ of $\triangle MCF$ ②
   By adding ① & ②
   $\therefore A$ of $ABEM = A$ of $DCFM$

   ③ $m(\hat{A}) = 90°$, $\overline{AD} \perp \overline{CB}$
   $\therefore (AB)^2 = (DB) \times BC \Rightarrow BC = \dfrac{(15)^2}{9}$
   $\therefore BC = 25$ cm

4. A)
   $\because \triangle ABC$, $m(\hat{B}) = 90°$
   $\therefore AC = \sqrt{16+9} = 5$ cm
   $\therefore (AD)^2 = (13)^2 = 169$
   $(AC)^2 + (DC)^2 = 25 + 144 = 169$

Right column:

$\therefore (AD)^2 = (AC)^2 + (CD)^2$
$\therefore m(A\hat{C}D) = 90°$ «Right Angle»

B) $A = \dfrac{1}{2}(B_1 + B_2) \times H$
$H = \dfrac{2A}{B_1 + B_2} = \dfrac{2 \times 40}{7 + 9} = 5$ cm

5. A) In $\triangle ABC, ADE$
   $\because m(A\hat{D}M) = m(\hat{B})$
   $m(\hat{A})$ Common angle
   $\therefore m(A\hat{E}D) = m(\hat{C})$
   $\therefore \triangle ABC \cong \triangle ADE$
   $\dfrac{AB}{AD} = \dfrac{AC}{AE} \Rightarrow \dfrac{8}{4} = \dfrac{AC}{5} \Rightarrow AC = 10$ cm
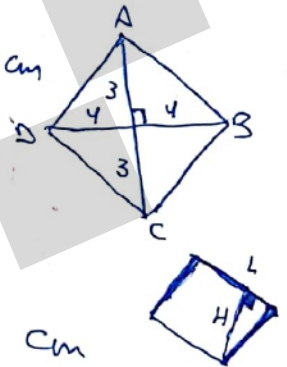 $\therefore DC = 10 - 4 = 6$ cm

B) $A_\Diamond = \dfrac{1}{2} d_1 d_2$
   $= \dfrac{1}{2}(8)(6) = 24$ cm²
   length $= \overline{AB} = \sqrt{9+16} = 5$ cm
   $A = $ length $\times H$
   $24 = 5 \times H$
   $H = \dfrac{24}{5} = 4.8$ cm

model (6) Geometry

Q1

① $d_2 = \dfrac{2A}{d_1} = \dfrac{2 \times 40}{10} = 8$ cm

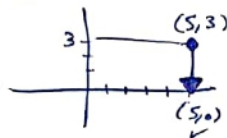② $d = \sqrt{2A} = \sqrt{100} = 10$

③ $(AB)^2 = (AC)^2 + (BC)^2$
∴ $m(\hat{B})$ is Acute

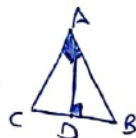④ $B = \dfrac{2A}{H} = \dfrac{2(30)}{5} = 12$ cm

⑤ $(5,0)$

⑥ $50°$

Q2

① $H = \dfrac{30}{6} = 5$ cm

② $AB \times AC = BC \times AD$

③ Twice

④ Proportion in length

⑤ equal In Area

Q3

Ⓐ $DF = 12 - 3 = 9$ cm

∵ $\triangle DAF \Rightarrow m(\hat{D}) = 90$

∴ $FA = \sqrt{(12)^2 + (9)^2} = 15$ cm

∵ $ABCD$ is square $\Rightarrow \overline{AD} \parallel \overline{BC}$

& $\overline{AE}$ is Transversal

∴ $m(\hat{D}) = m(F\hat{C}E) = 90°$ Alternate

∴ $m(D\hat{F}A) = m(E\hat{F}C)$ Vertically opposite Angles

∴ $\triangle ADF \cong \triangle ECF$ (V.O.A)

$\dfrac{AD}{EC} = \dfrac{DF}{CF} \Rightarrow \dfrac{12}{EC} = \dfrac{9}{3}$

$EC = \dfrac{12 \times 3}{9} = 4$ cm

Ⓑ ∵ A of $\triangle DBM = A$ of $\triangle CME$

By adding A of $\triangle MDE$ for each other

∴ A of $\triangle EDB = A$ of EDC

ℓ (ED) Common Base & in Same Side from the Base

∴ $\overline{ED} \parallel \overline{CB}$ & $(\overline{AC})$ is Transversal

∴ $m(A\hat{E}D) = m(A\hat{C}B) = 70°$

By Corresponding

Q4

Ⓐ Assume first Base $= 2X$

Seconde Base $= 3X$

middle Base $= \dfrac{2X + 3X}{2} = \dfrac{30}{1}$

$5X = 60 \Rightarrow X = 12$

∴ first Base $= 2X = (2 \times 12) = 24$ cm

Second ~ $= 3X = (3 \times 12) = 36$ cm

$A = M.B \times H = 30 \times 24 = 720$ cm²

Ⓑ In $\triangle\triangle$ & DEM & DMO

$\overline{DM}$ is a medium (D is a midpoint of $\overline{BC}$)

∴ A of $\triangle DME = A$ of $\triangle DMO$ ①

∵ $\overline{DA} \parallel \overline{OB}$ & $(\overline{DA})$ Common Base

∴ A of $\triangle DAB = A$ of $\triangle DAO$

By deleting A of DAM from each other

∴ A of $\triangle MAB = A$ of $\triangle DMO$ ②

from ① & ② ⇒ ∴ A of $\triangle ABM = \triangle DME$

Q5

Ⓐ $(AB)^2 = 64$ & $(AC)^2 + (BC)^2 = 85$

∴ $(AB)^2 < (AC)^2 + (BC)^2 \Rightarrow$ ∴ $\triangle ABC$ is Acute Triangle - Angle

Ⓑ ∵ $\triangle XYZ \Rightarrow m(\hat{Y}) = 90°$

∴ $XZ = \sqrt{(7)^2 + (24)^2} = 25$ cm

$(XZ)^2 = 625$ & $(LX)^2 + (LZ)^2 = (15)^2 + (20)^2 = 625$

∴ $m(\hat{L}) = 90° \Rightarrow LM = \dfrac{15 \times 20}{25} = 12$ cm

$\overline{XM} = \dfrac{(15)^2}{25} = 9$ cm

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⑫

model (7) Geometry

Q1

① $d = \sqrt{2A} = \sqrt{100} = 10$

② $1 : 3$
$X : 12 \Rightarrow X = \frac{12}{3} = 4$ cm

③ $(AB)^2 > (AC)^2 + (BC)^2$

$\angle B$ is Acute

④ $A = \frac{1}{2}(B_1 + B_2) \times H$
$= \frac{1}{2}(10 + 6) \times 5 = 40$ cm^2

⑤ $A = \frac{1}{2} d_1 d_2 = \frac{1}{2}(12) d_2 = 48$
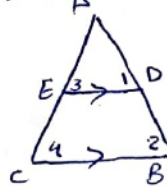$d_2 = 8$ cm

⑥ $\frac{1}{4}$

Q2

① equal

② Similar

③ equal in Area

④ $(0, 3)$

⑤ equal in length / Congruent

Q3

Ⓐ ∵ $\overline{DE} \parallel \overline{BC}$ & $\overline{AB}$, $\overline{AC}$ Transversals

$m(\hat{1}) = m(\hat{2})$
$m(\hat{3}) = m(\hat{4})$
$m(\hat{A})$ common Angle

∴ $\triangle ADE \sim \triangle ABC$
$\frac{AD}{AB} = \frac{DE}{BC} \Rightarrow \frac{1}{3} = \frac{6}{BC}$
$BC = 18$ cm

Ⓑ ∵ A of $\triangle ADB$ = A of $\triangle XDE$ ①
∵ AD is a median in $\triangle ABC$
∴ A of $\triangle ABD$ = A of $\triangle ADC$ ②
From ① & ②
∴ A of $\triangle XDE$ = A of $\triangle ADC$ ⑭

By deleting A of $\triangle XDC$ from each other
∴ A of $\triangle CXA$ = A of $\triangle CXE$
∵ CX common Base and two Triangles on the same side from the Base ∴ $\overline{XC} \parallel \overline{AE}$

Q4

Ⓐ ∵ ABCD Parallelogram
∴ $AB = CD = 8$ cm $\Rightarrow$ ∵ $\triangle ABC$
$(AC)^2 = 361$ S $(AB)^2 + (BC)^2 = 289$
∵ $(AC)^2 > (AB)^2 + (BC)^2$
∴ $\triangle ABC$ is obtuse in $m(\hat{ABC})$

Ⓑ ∵ ADCB Parallelogram
$\ell(\overline{AB})$ common Base S $X \in \overline{DC}$
∴ A of $\triangle AXB = \frac{1}{2}$ A of $\square ADCB$ ①
∵ EBCF is Parallelogram
$\overline{CF}$ common Base ℓ $X \in \overline{EB}$
∴ A of $\triangle FXC = \frac{1}{2}$ A of $\square EBCF$ ②
∵ A of ADCB = A of EBCF ③
have [BC common Base ℓ $\overline{CB} \parallel \overline{AF}$]
∴ From ① & ② & ③
∴ A of AFX = A of AXB

Q5

Ⓐ $P_\diamond = 60$ cm

$\ell = \frac{60}{4} = 15$ cm

∵ in $\triangle ABD$ [$AB = AD$] & $AE \perp BD$ ∴ $m(e\hat{AB}) = m(e\hat{AD}) = \frac{60}{2} = 30°$
∵ $eB = \frac{15}{2} = 7.5 \Rightarrow BD = 2 \times 7.5 = 15$ cm
$eA = \sqrt{(15)^2 - (7.5)^2} = 13$ cm $\Rightarrow AC = 26$ cm
∴ $A = \frac{1}{2}(15)(26) = 195$ cm^2

Ⓑ ∵ $\triangle BCD \rightarrow m(\hat{c}) = 90° \Rightarrow DB = \sqrt{(7)^2 + (24)^2}$
$DB = 25$ cm $\Rightarrow$ ∵ $m(\hat{A}) = 90°$ & $\overline{AE} \perp \overline{DB}$
$AD = \sqrt{(25)^2 - (15)^2} = 20$ cm
※ length of Projection of $\overline{AB}$ on $\overline{BD} = \overline{EB}$
$EB = \frac{(15)^2}{25} = 9$ cm
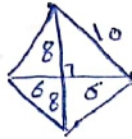※ length of Projection of $\overline{AD}$ on $\overline{AE} = \overline{AE}$
$AE = \frac{15 \times 20}{25} = 12$ cm #

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model (8) Geometry

① ℓ $= \sqrt{(8)^2+(6)^2} = 10$ cm

P $= 4\ell = 40$ cm

② =

③ $A = 8 \times 4 = 32$ cm³

④ $360°$

⑤ $120°$

⑥ $P = 12 \Rightarrow S = 3$ cm

$A = S^2 = 9$ cm²

---

②

① equal In Area

② $(AB)^2 = 64$ & $(BC)^2 + (AC)^2 = 41$

Then $\triangle ABC$ Is obtus Traingle Angle In $(\hat{C})$

③ $A = 9 \times 7 = 63$ cm²

④ proportion In length

⑤ hypotenuse.

---

③ $\Rightarrow \overline{ME}$ is a meduim In $\triangle MBC \Rightarrow$

∵ A of $\triangle MEB = A$ of $\triangle MEC$ ①

∵ $\overline{AD} \parallel \overline{BC}$ & $(\overline{DA})$ Common Base

∴ A of $DAB = A$ of $\triangle ADC$

By deleting A of $\triangle ADM$ from each other

Then $\Rightarrow$ ∴ A of $\triangle AMB = A$ of $\triangle DMC$ ②

③) adding ① & ②

∴ A of $ABEM = A$ of $DCEM$

B ∵ $m(\hat{A}) = 90$ & $\overline{AD} \perp \overline{CB}$

∴ $AD = \sqrt{9 \times 16} = 12$ cm

$AB = \sqrt{BD \times BC} = \sqrt{9 \times 25}$

$= 15$ cm

---

④ ∵ $\triangle CAB \rightarrow m(\hat{B}) = 90$

∴ $CB = \sqrt{(10)^2 - (6)^2} = 8$ cm

∴ $DC = 12 - 8 = 4$ cm

∴ $(EC)^2 = 25$ & $(DE)^2 + (DC)^2 = 25$

∴ $(EC)^2 = (DE)^2 + (DC)^2$

∴ $\triangle EDC$ is (Right - Traingle Angle In $(\hat{D})$ $\Rightarrow m(\hat{D}) = 90°$

				Perimeter
first △	AB	BC	AC	54
other △	5	6	7	18

∴ $AB = \dfrac{5 \times 54}{18} = 15$ cm

$BC = \dfrac{6 \times 54}{18} = 18$ cm

$AC = \dfrac{7 \times 54}{18} = 21$ cm

---

⑤ ∵ A of $\triangle ABE = A$ of $\triangle ACD$

By deleting A of $\triangle ADE$ from each other Then

∴ A of $EDB = A$ of $\triangle EDC$

$(\overline{ED})$ common Base and the two Triangles are on the same side Then ∴ $\overline{ED} \parallel \overline{BC}$

B $A = $ Middle Base $\times H$

$110 = M.B \times 10$

$M.B = 11$ cm

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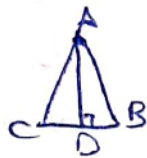
⑯

model (9) Geometry

<u>1</u>
① $A = (12)^2 = 144$

② $E D 3$

③ $120°$

④ $(12)^2 = 144$ & $(5)^2 + (8)^2 = 89$

obtuse Triangle

⑤ $m(\hat{c}) > 90°$

⑥ $d_2 = \dfrac{2A}{d_1} = \dfrac{2(100)}{10} = 20\ cm$

<u>2</u>
① $20°$

② Twice or Double

③ $\dfrac{1}{2}(AB)(CE) = \dfrac{1}{2}AC \ast BD$

∴ $BD = \dfrac{5 \times 8}{10} = 4\ cm$

④ $90°$ (Complementary)

if Supplementary $= 180°$

⑤ Proportion in length

<u>3</u> $\overline{BE}$ is a medium in

$\triangle BXY$

∴ A of $\triangle XEB = A$ of $\triangle EYB$ ①

∵ $\overline{AC} \parallel \overline{XY}$ ($XE = \overline{EY}$) &

A & C on the $\overline{AC}$ or (A & C $\in \overline{AC}$)

∴ A of $\triangle EXA = A$ of $\triangle EYC$ ②

By adding ① & ②

∴ A of $\triangle ABF = A$ of $\triangle CBF$

<u>B</u> Repeated Idea (model 4 | 3 B)

↳ $\dfrac{AB}{AD} = \dfrac{AC}{AE} \Rightarrow \dfrac{AB}{8} = \dfrac{7}{5}$

$AB = 11,2\ cm$

$BD = 11.2 - 8 = 3.2\ cm$

<u>4</u> ① Assume length of the

$B_1 = 3X$ & $B_2 = 2X$

$A = \left(\dfrac{B_1 + B_2}{2}\right) \times H$

$180 = \dfrac{5X}{2} \ast (12)$

$5X = \dfrac{180}{6} = 30 \Rightarrow X = 6\ cm$

$B_1 = 6(3) = 18\ cm$

$B_2 = 6(2) = 12\ cm$

<u>B</u> ∵ $\sqrt{ABCD}$, $AEFD$ are

parallelograms

$\overline{AB} \parallel \overline{DC}$ (AB common Base)

∴ A of $\triangle ABM = \dfrac{1}{2}$ A of $\square ABCD$ ①

∵ $\overline{DF} \parallel \overline{AE}$ (DF common Base)

∴ A of $\triangle DFM = \dfrac{1}{2}$ A of $\square DAEF$ ②

from ① & ②

∴ A of $\triangle ABM = A$ of $\triangle DFM$

<u>5</u> ∵ $\triangle ABC$, $m(\hat{B}) = 90°$

∴ $AC = \sqrt{(7)^2 + (24)^2} = 25\ cm$

$(AC)^2 = 625$, $(DA)^2 + (DC)^2 = 625$

∴ $(AC)^2 = (DA)^2 + (DC)^2$

∴ $\triangle DAC$ is Right-angle -Triangle

In $m(\hat{D})$ & ∵ $\overline{DE} \perp \overline{CA}$

∴ Projection of $\overline{DC}$ on $\overline{AC}$

Is $= CE = \dfrac{(CD)^2}{AC} = \dfrac{(15)^2}{25}$

$= 9\ cm$

\#

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18

model (10) Geometry

①

① $d_2 = \dfrac{2A}{d_1} = \dfrac{2(48)}{12}$

$= 8 \ cm$

② $(CA)^2 = 121$ &

$(AB)^2 + (BC)^2 = 74$

∴ $m(\hat{B})$ is obtuse

③

4	6	8	Perimeter
x	y	z	18
			72

$x = 16 \ cm$
$y = 24 \ cm$
$z = 32 \ cm$

④ equal in Area

⑤ ① $\overline{DA}$ or $\overline{AD}$

② $\overline{CD}$ ⨯ $\overline{CA}$

②

① $B = \dfrac{2A}{H} = \dfrac{2(24)}{8}$

$= 6 \ cm$

② A of $\square = 40 \ cm^2$

③ $H = \dfrac{2A}{(B_1 + B_2)}$

$= \dfrac{2(42)}{5+7} = 7 \ cm$

④ $m(C)$ obtuse

⑤ $L = 5 \ cm$
$A = 5 \times 12 = 60 \ cm^2$

(13, 12, L triangle)

③
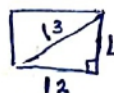
Ⓐ $ABCD$ is $\square$

∴ $AB = \overline{CD} = 6 \ cm$

& $FA = 12 - 8 = 4 \ cm$

$\overline{AD} \parallel \overline{BC}$ & $\overline{EB}$ transversal

∼ $m(\hat{B}) = m(E\hat{A}F)$ Corresponding

∼ $m(\hat{B}) = m(\hat{D})$ $ABCD$ $\square$

∴ $m(E\hat{A}F) = m(\hat{D})$ ①

∼ $m(EF\hat{A}) = m(D\hat{F}C)$ V.O.A

∴ $\triangle AEF \sim \triangle DCF$

$\dfrac{AE}{DC} = \dfrac{AF}{DF} \Rightarrow \dfrac{AE}{6} = \dfrac{4}{8}$

$AE = \dfrac{6 \times 4}{8} = 3 \ cm$

$\overline{EB} = 3 + 6 = 9 \ cm$

$\dfrac{EF}{CF} = \dfrac{AE}{DC} \Rightarrow \dfrac{3}{6} = \dfrac{EF}{CF}$ ②

∼ $m(E\hat{A}F) = m(\hat{B})$
$m(E)$ common angle

∴ $\triangle EAF \cong \triangle EBC$

∼ $\dfrac{EA}{EB} = \dfrac{EF}{EC} \Rightarrow \dfrac{3}{9} = \dfrac{EF}{7+EF}$

∼ $9EF = 21 + 3EF \Rightarrow EF = 3.5 \ cm$

Ⓑ Repeated idea (model 5) 3Ⓑ

④ Ⓐ ∼ $\triangle ABK$
$(AK)^2 = 100$
$(AB)^2 + (BK)^2 = 100$
$(AK)^2 = (AB)^2 + (BK)^2$
∼ $m(A\hat{B}D) = 90°$
A of $\square ABCD = AB \times BD = 8 \times 12 = 96 \ cm^2$

(parallelogram D A K C B, 5, 10, 10, 6, 8cm)
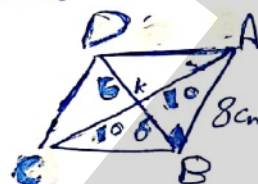
Ⓑ at first
By Connecting $\overline{XD}$ & $\overline{BY}$
∼ $ABCD$ is Parallelogram
$\overline{DY}$ Common Base
$\overline{DY} \parallel \overline{CB}$
∴ A of $\triangle DYC = A$ of $\triangle DYX$ ①
∼ $\overline{XB}$ Common Base & $\overline{XB} \parallel \overline{CD}$
∴ A of $\triangle XBC = A$ of $\triangle XBD$ ②
∼ A of $\triangle XBC = A$ of $\triangle DYC$ ③
from ① & ② & ③
∴ A of $\triangle DYB = A$ of $\triangle XBD$
$(\overline{DB})$ Common Base & $2 \triangle\triangle$ on the same Side ∴ $\overline{XY} \parallel \overline{DB}$

(figure D Y A, X, C B)

⑤ ∼ $\triangle BCD \Rightarrow m(\hat{C}) = 90°$
∴ $DB = \sqrt{(7)^2 + (24)^2} = 25 \ cm$
∼ $\triangle ABD$ & $m(\hat{A}) = 90°$ & $\overline{AE} \perp \overline{BD}$
② ∼ Projection of $\overline{AB}$ on $\overline{BD} = \overline{EB}$
$EB = \dfrac{(15)^2}{25} = 9 \ cm$
① $\overline{AD} = \sqrt{(25)^2 - (15)^2} = 20 \ cm$
③ Projection of $\overline{AD}$ on $\overline{AE}$ is $\overline{AE}$
$AE = \dfrac{15 \times 20}{25} = 12 \ cm$ #

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Model (1)

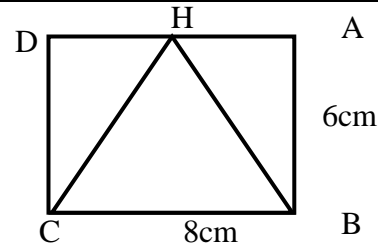**1) Choose the correct answer :**

a) In the opposite figure

The area of Δ BHC =   cm^2

(48 , 24 , 16 , 12)

6cm

C   8cm   B

b) If triangle its area 80 cm^2 and it height is 16 then its base length is .... cm

(10 , 5 , 6 , 48)

c) A square its area is 18cm^2, then its diagonal length = …… cm

(36 , 12 , 6 , 48)

d) The area of trapezium, the lengths of its two parallel bases are 8cm, 4cm and its height is 5cm =……   (60cm^2 , 32 cm^2 , 30 cm^2 , 40 cm^2)

e) Δ ABC is an obtuse angled triangle at B, AB = 3 cm , BC = 5 cm then AC = ……

(8 cm , 5cm , 7 cm , 4 cm)

f) The sum of measures of the interior angles of a triangle = ………°

(90 , 120 , 180 , 360)

2) Complete:

a) In the opposite figure . $\overline{AD} \perp \overline{BC}$

the projection of $\overline{AC}$ on $\overleftrightarrow{BC}$ is …………..
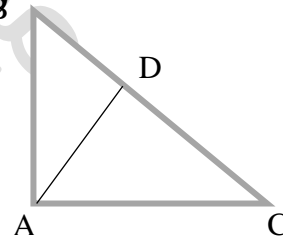
b) ……………...of the triangle divides its surface into two triangles which are equal in area.

c) A rhombus , the lengths of its two diagonals are 16 cm , 12 cm its area =……..cm^2

d)The ratio between the area of the triangle and the area of the parallelogram which have common base and lying between two parallel straight lines

=………………………………………………

e) The two triangle are similar if their corresponding sides are …………………

196

3)**a)** ABFD , AFEH are two parallelograms prove that they are equal in area , If the area of the Δ AFD = 20 cm² find the area of the parallelogram AFEH
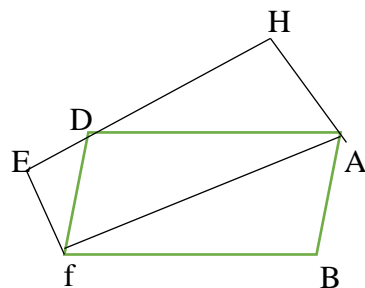
b) In the opposite figure:
ABC is a triangle in which
AB= 5cm , AC = 4 cm , X $\in \overline{AB}$
AX = 3cm , $\overline{XY}$ // $\overline{BC}$
XY = 3.6 cm , $\overline{XY} \cap \overline{AC}$ = {Y} prove that Δ AXY∼ΔABC
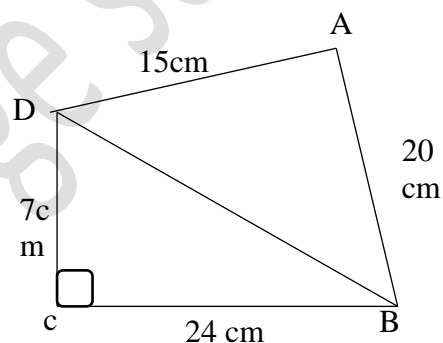Find the length of $\overline{BC}$, $\overline{AY}$
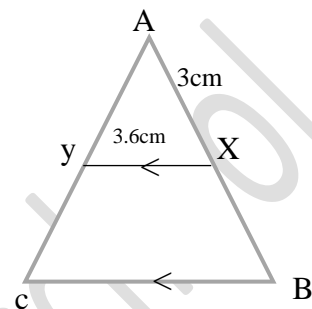
4) A) In the opposite figure
m∠ BCD = 90° , DC = 7cm
BC = 24 cm , AB = 20 cm , AD = 15cm
Prove that m∠ BAD = 90° then find the length of the projection of $\overline{AB}$ on $\overline{BD}$

B) determine the type of the angle in Δ ABC in which
AB = 6 cm , BC = 10 cm , AC = 14 cm

5) $\overline{AC} \cap \overline{BD}$ = {M}
Area Δ AMB = area of Δ DMC
$\overline{DH}$ // $\overline{MC}$ prove that :
First : $\overline{AD}$ // $\overline{BC}$.
Second: area of Δ AMB = area of Δ HMC
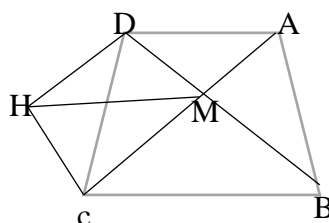
Model (2)

1) Choose the correct answer:

a) In the opposite figure If the area of parallelogram
ABCD = 8cm²
Then the area of Δ BHC = …………….cm²
b) The area of rhombus its diagonal lengths are
6cm , 10cm , is ……….cm²   (60 , 20 , 30 , 32)
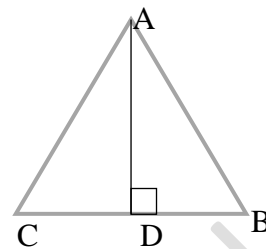c) The triangle whose side lengths are (4 , 5 , 8) cm is ………..
angled triangle.   (acute , right , obtuse , otherwise)

197
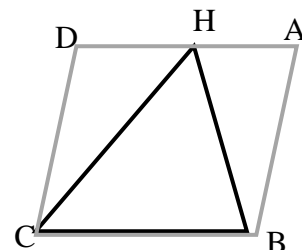
d) If the ratio of enlargement of two similar triangles is ……. Then the two triangles are congruent (1 , 0.5 , 0.25 , 3)

e) If $\overline{AD} \perp \overline{BC}$ then the projection of $\overline{AB}$ on $\overline{BC}$ is
($\overline{BC}$, $\overline{BD}$, $\overline{DC}$, $\overline{AD}$)

f) The sum of measures of the interior angles of a quadrilateral is ……….°
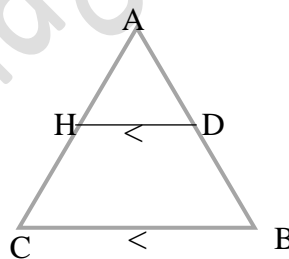(90 , 180 , 360 , 540)

2) Complete :
a) The two triangles are similar if their corresponding angles are…..
b) A square its diagonal length = 12 cm , then its area is …… cm^2

c) The two polygons which are similar to a third one are ………..

d) In the opposite figure:
$\overline{DH}$ // $\overline{BC}$ then Δ ABC ~ ....
e) The area of the square which drawn on the hypotenuse in the right angled triangle = ………….

3) In the opposite figure
m∠ xml = m∠ y , XL = 6cm, Ly = 12cm , XM= 9cm
first : prove that Δ Xyz ~Δ YML
second : find the length of $\overline{MZ}$
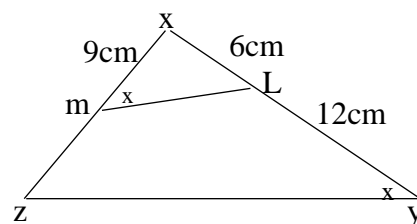
4) In the opposite figure :
XY = 8cm , XL = 17cm
ZY = 12cm , LZ = 9cm , m∠ LZY = 90° , $\overline{ZM} \perp \overline{LY}$
prove that m∠ XYL = 90°
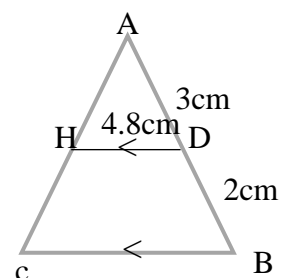then find the projection$\overline{YZ}$ on $\overleftrightarrow{YL}$

198
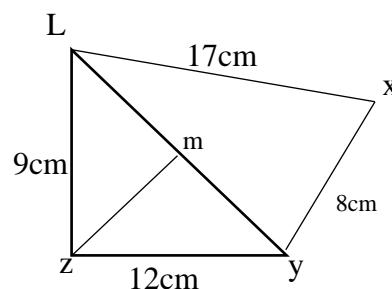
5) a) In the opposite figure

in Δ ABC which $\overline{DH}$ // $\overline{BC}$

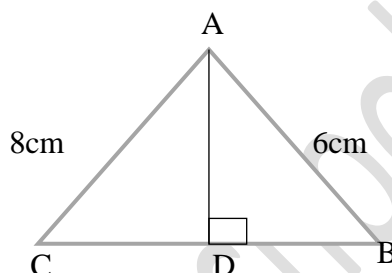AD = 3cm , BD = 2cm , HD = 4.8 cm

Prove that Δ ADH ~Δ ABC then find the length of $\overline{BC}$

b) In the opposite figure

Δ ABC in which

∠ ABC is a right angle ,

$\overline{AD}⊥\overline{BC}$, AB = 6 cm , AC = 8 cm

Find the length of $\overline{AD}$

Model (3)

1) **Complete :**
a) The two parallelograms which have a common base and lying between two parallel lines one of them carrying this base are ………
b) The area of the triangle = ………the area of parallelogram which have a common base and included between two parallel straight lines
c) If the area of rhombus = 48 cm^2 , and the length of one of its diagonal = 12cm , then the length of the other diagonal = ………..cm
d) The trapezium in which the lengths of the two parallel bases ara 7 cm , 13cm and its height is 8cm , then its area = …………
e) The two triangles are similar if …………….

2) Choose the correct answer :

a) If the area of Δ ABE = 2cm^2

then area of parallelogram ABC …..cm^2

(8 , 4 , 2 , 6)

b) In a rectangle XYZL , the projection of $\overline{XY}$ on $\overline{YZ}$ is

($\overline{XL}$, {Y} , $\overline{LY}$, $\overline{XL}$)

c) The triangle which its base length = 5 cm , its height = 6cm , then its area = ………cm^2 (30 , 15 , 60 , 40)

d) The square which its diagonal length is 10 cm then its area = ………cm^2

(100 , 40 , 50 , 200)
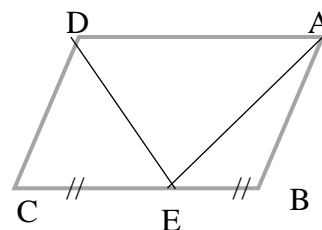
e) The image of the point (-2 , -3) by reflection on the x-axis is ……..

((2 , 3) , (2 , -3) , (-2 , 3) , (-2 , -3))

f) An isosceles triangle of two sides lengths 3 cm , 6 cm , then the length of the third side is ……. cm   (3 , 5 , 6 , 9)

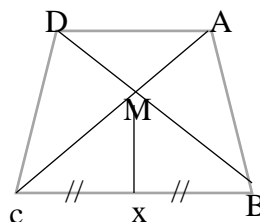3) a) prove that the triangle whose side lengths are 7 cm , 4 cm , 5 cm is obtuse angled triangle

b) In the opposite figure :

$\overline{AD}$ // $\overline{BC}$, $\overline{AC}$ ∩ $\overline{BD}$ = { M }

X is a midpoint of $\overline{BC}$

Prove that :

   1) The area Δ AMB = area of Δ DMC
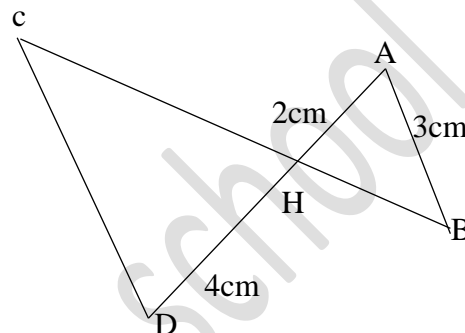
   2) The area of figure ABXM =area of figure DMXC

4) In the opposite figure

$\overline{AB}$ // $\overline{CD}$, AB = 3cm , AH = 2cm , HD = 4cm

Prove that

Δ ABH ∼Δ DCH , then find the length of $\overline{CD}$

5) In the opposite figure

m∠ L y x = 90° ,

ZY = 20 cm , XY = 12cm ,

LY = 9cm , LZ= 25 cm

First : 1) prove that : m∠ ZXL = 90°

      2) find the length of projection of $\overline{XZ}$ on $\overline{LZ}$
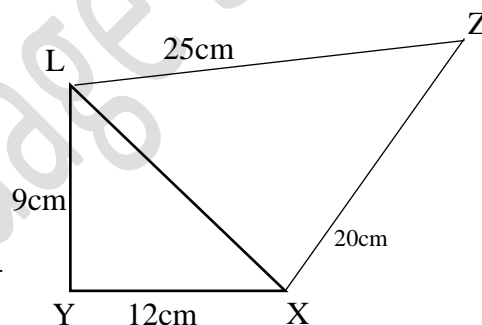
Model (4)

1) Complete

   1) A rhombus its diagonals lengths are 11 cm , 6cm then its area = ………..cm^2

   2) The two triangle are similar if their corresponding angles are ………

   3) The trapezium in which the lengths of its two parallel bases are 7cm , 3 cm and its height is 8 cm . its area = …………….cm^2

   4) The area of the square which is drawn on the hypotenuse of the right angled triangle = …………..

   5) If Δ ABC ≡Δ DHE , m∠ ABC = (3x -15)°

     m∠ DHE = (2x+10)° then the value of x = ……..
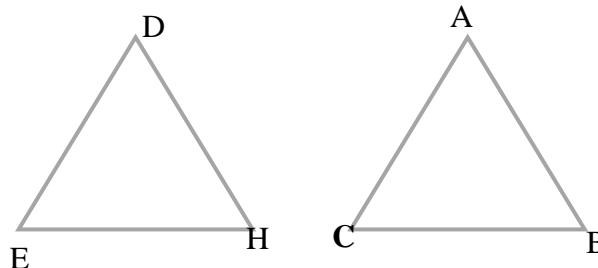
2) Choose the correct answer between brackets:

a) In the opposite figure : the area of Δ BHC =

(48 , 24 , 16 , 12)

D H A

6cm

C 8cm B
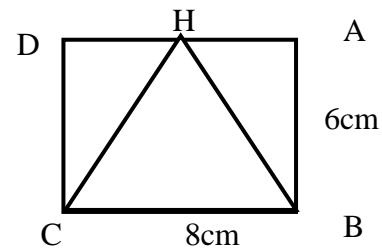
b) A square its diagonal length is 10 cm , then its ,

area = ………..cm^2

(100 , 40 , 50 , 60)

c) A triangle its base length is 8cm , its

height is 5 cm then its area = ………… cm^2 (100 , 20 , 40 , 13)

d) If (AB)^2 > (AC)^2 + (BC)^2 then ∠ B is ……………..

(obtuse , right , acute , straight)

e) The number of diagonals of the pentagon is (2 , 3 , 4 , 5)

f) A rectangle its two dimensions are 6 cm , 8 cm , then its diagonal length
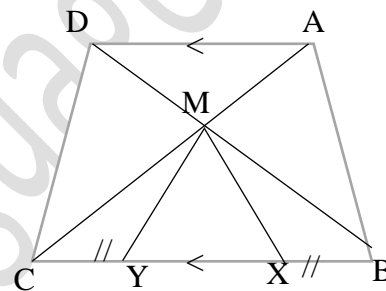
= ………… cm   (48 , 2 , 14 , 10)

3) a) Determine the type angle B in triangle ABC in which AB = 4cm , BC = 5 cm ,

AC = 7 cm

b) In the opposite figure

$\overline{AD}$ // $\overline{BC}$. $\overline{AC} \cap \overline{BD}$ = {m}

X, Y ∈ $\overline{BC}$ such that BX = CY

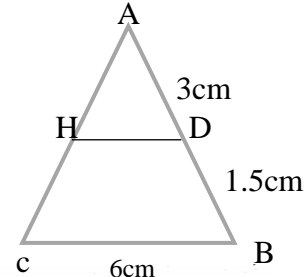Prove that the area of shape ABXM=

Area of shape DCYM

D A

M

C Y X B

4) a) Δ ABC ∼ Δ ADH

DB = 1.5 cm BC = 6cm

Prove that $\overline{DH}$ // $\overline{BC}$ then find the length of $\overline{DH}$

A

3cm

H D

1.5cm

c 6cm B

b) In the opposite figure

In the opposite figure :

ABCD , AEOD area two parallelograms

, $\overrightarrow{AE} \cap \overrightarrow{DC}$ = {X}

Prove that : The are of Δ ABX = The area of Δ DOX

D A

O C E B

X
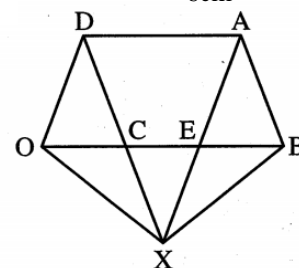
5) In the opposite figure :

ABCD is a quadrilateral in which m (∠ ABD) = 90°

, m (∠ BCD) = 90° , m (∠ BDC) = 30° ,

AB = 3 cm. and AD = 5 cm.

Find : CB

A

5cm. 3cm.

D 30° B

C

201
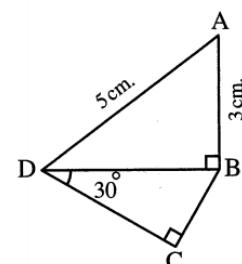
Model (5)

1) choose the correct answer :

a) If the ratio of similarity of two similar triangles is …………then the two triangles are congruent .   (1 , 0.5 , 0.25 , 2)

b) A triangle its area is 40 cm² , its height is 8 cm then its base length = ….cm
(10 , 5 , 12 , 18)

c) A rhombus its diagonal lengths are 12 cm , 8 cm then its area is …..cm²
(96 , 20 , 4 , 48)

d) The area of trapezium in which the lengths of its two parallel bases are 4 cm , 8 cm and its height is 5cm equals ………….
(60cm², 32cm², 30cm², 40cm²)

e) ABC in which AB = 7 cm , BC , 5 cm , AC = 3cm then the type of angle c
is …………   (obtuse , right , acute , straight)

f) An isosceles triangle of base angles 2x+ 10 and x+40 of degrees then
x = ………..° (20 , 30 , 40 , 50)

2) complete :

a) The two triangle are similar if ………………………….…………

b) …………….. of the triangle divides its surface into two triangles which are equal in area

c) It the area of Δ XBC = 8 cm² then the area of
the parallelogram ABCD = ……….
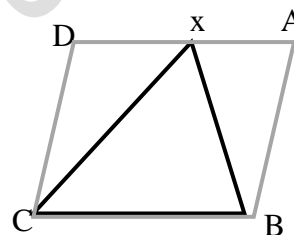
d) The length of the side of the square which its area equals the area of a rectangle of dimensions 9 cm , 16 cm =……………..cm

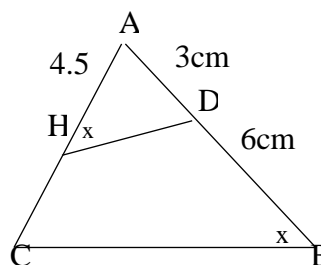e) The area of the square drawn on the hypotenuse of the right angled triangle equals

3) a) In the opposite figure

If m∠ AHD = m∠B

AD = 3cm , AH = 4.5 cm BD = 6 cm ,

First : Prove that : Δ ABC ∼Δ AHD
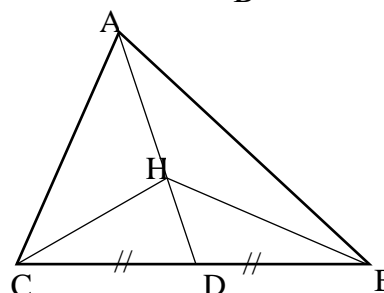
Second : the length of $\overline{HC}$

b) In the opposite figure

$\overline{AD}$ is a median in Δ ABC H∈$\overline{AD}$
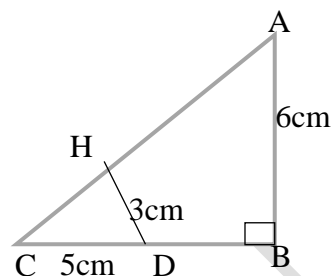
Prove that a. of Δ ABH = a. of Δ ACH

4) a) in the opposite figure

ABC is a right angled triangle at B

$\overline{DH}\perp\overline{AC}$, AB = 6cm HD = 3cm

CD = 5cm

Prove that Δ ABC ∼Δ DHC then find the length of $\overline{AC}$
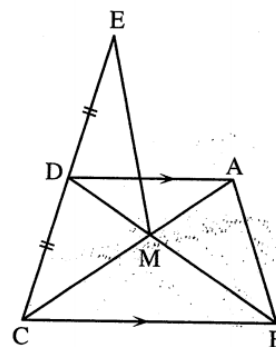
b) In the opposite figure :

$\overline{AD}$ // $\overline{BC}$,

$\overline{AC}\cap\overline{BD} = \{M\}$,

D is the midpoint of $\overline{EC}$

Prove that :

The area of Δ MDE = the area of Δ AMB

5) In the opposite figure

In the opposite figure :
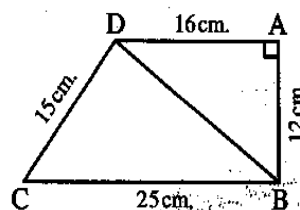
m (∠ A) = 90° , AB = 12 cm. , BC = 25 cm. ,

, CD = 15 cm. , and AD = 16 cm.

(1) Find the length of : $\overline{BD}$

(2) Prove that : m (∠ BDC) = 90°

(3) Find the area of the figure : ABCD

(4) Find the length of projection of $\overline{AB}$ on $\overline{BD}$

Good Luck☺

Model (1) (answer)

1)

a) 24cm^2	b) 20 cm	c) 6cm
d) 30 cm^2	e) 7cm	

2)

a) $\overline{DC}$	b) Median	c) 72 cm^2
d) 1 :2	e) similar	

3) a) ∵Δ AFD, parallelogram ABCD have a common base ($\overline{AD}$) and lying between 2 parallel lines.

∴ area of Δ AFD = $\frac{1}{2}$ area of parallelogram ABCD ⇒(1)

∵ AFD,parallelogram AFED have a common base ($\overline{AF}$)and lying between 2 parallel lines.

∴ area of Δ AFD = $\frac{1}{2}$ area of parallelogram AFEH ⇒ (2)

From (1) , (2) ∴ area of parallelogram ABCD = area of parallelogram AFEH

∵ area of triangle AFD = 20 cm²

∴ area of parallelogram AFEH = 40 cm^2

b) In ΔΔ AXY ABC

∠ A is common angle (1)

∵$\overline{Ay}$ // $\overline{AC}$

∴ m∠ AXY = m∠ B (2) corresponding angle

m∠ A y x = m ∠ C (3) corresponding angle

From (1) , (2) , (3)

∴Δ AXY ~Δ ABC

∴$\frac{AX}{AB} = \frac{XY}{BC} = \frac{AY}{AC}$

∴$\frac{3}{5} = \frac{3.6}{BC} = \frac{Ay}{4}$

∴ AY = $\frac{3×4}{5}$ = 2.4 cm

∴ BC = $\frac{3.6×5}{3}$ = 6 cm

4) a)

∵ BCD is a right-angle triangle at C

∴ BD = $\sqrt{7^2 + 24^2}$ = 25 cm

∵ AB^2 = 20^2 = 400^{2}cm^2

AD^2 = 15^2 = 225cm^2

BD^2 = 25^2 = 625cm^2

∵ 625 = 400 + 225

∴ BD^2 = AB^2 + AD^2

∴ Δ ABD is right angle triangle at A

∴ m∠ BAD = 90°

Draw $\overline{AM} \perp \overline{BD}$

∴ the projection of $\overline{AB}$ on $\overline{BD}$ is $\overline{BM}$

∴ AB^2 = BM × BD

(20)^2 = BM × 25   ∴ MB = $\frac{20^2}{25}$ = 16 cm

∵ AC^2 = 14^2 = 196 cm^2

AB^2 = 6^2 = 36 cm^2

BC^2 = 10^2 = 100 cm^2

AC^2> AB^2 + BC^2 ∴ ∠B is obtuse angle
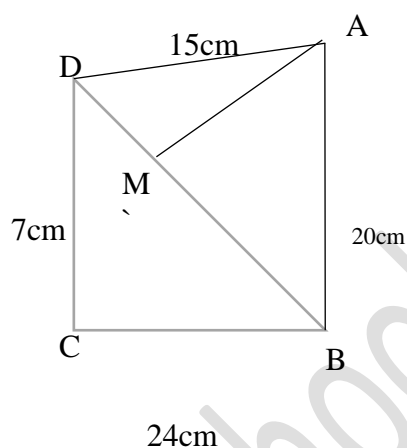
5) ∵ area of Δ AMB = area of Δ DMC   (1)

BY adding area of Δ BMC for bot1h sides

∴ area of Δ ABC = area of Δ DBC which have

common base $\overline{BC}$

∴ $\overline{AD}$ // $\overline{BC}$

∵ ΔDMC , ΔHMC have common base

$\overline{CM}$, $\overline{DH}$, // $\overline{CM}$

∴ area of Δ DMC = area of Δ HMC (2)

From (1) , (2)

∴ area of Δ AMB = area of ΔHMC